SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF SAN DIEGO
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| COORDINATION PROCEEDING SPECIAL TITLE (Rule 1550 (b)) | JCCP No. 4042 |
| In re TOBACCO CASES II | |
| This document relates to: | |
| The People of the State of California, et al. v. Philip Morris Incorporated, et al., Los Angeles Superior Court Case No. BC 194217; | |
| The People of the State of California, et al., v. General Cigar Co., et al., San Francisco Superior Court Case No. 996780; | |
| The People of the State of California, et al., v. Brown & Williamson Tobacco Corp., et al., San Francisco Superior Court Case No. 996781; | |
| The People of the State of California, et al. v. Tobacco Exporters, et al., San Francisco Superior Court Case No. 301631. | |

DEPOSITION OF
KENT E. PINKERTON, Ph.D.

May 23, 2000
VOLUME II (Pages 186 - 398)
(Videotaped)

REPORTED BY: CLARE MACY, CSR 5256



I N D E X

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| 535Q | Fax cover sheet dated February 25, 1999 from Roger Lane Carrick to Professor Kent E. Pinkerton transmitting an article entitled "Passive smoking tied to breast cancer risk"; Bates Nos. PX-KEP-000693 - 695 | 247 |
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| 535S | One-page letter dated November 15, 1999 from Kent E. Pinkerton to Roger L. Carrick; Bates No. PX-KEP-000697 | 248 |
| 535T | One-page letter dated May 13, 1999 from Carolyn E. Sieve to Professor Kent E. Pinkerton transmitting an agreement for consulting services; Bates Nos. PX-KEP-000698 - 705 | .... 249 |
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| 535X | Two-page order form entitled "Allegany Trail Tobacco Discount Cigarettes"; Bates Nos. PX-KEP-000793 - 794 | 252 |
| 535Y | Collection of e-mail printouts, the first of which is dated May 6, 1999 from Kent Pinkerton to Kim Lamar, along with an agreement for consulting services; Bates Nos. PX-KEP-000795 - 818 | 253 |
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535DD Facsimile transmittal dated May 18, 2000 from Kimberly Lamar transmitting publications and CV of Dr. Pinkerton; Bates Nos. PX-KEP-001017 - 1033 256

535EE 18-page report entitled "Effect of Environmental Tobacco Smoke on Respiratory Health Outcomes in Animals"; Bates Nos. PX-KEP-000884 - 901 ..... 257

535FF Declaration of Kent E. Pinkerton, Ph.D. in Support of Reply to Defendants' Opposition to Plaintiff's Motion for Preliminary Injunction containing one underlining/circling one page 1; Bates Nos. PX-KEP-000921 - 951 . 258

535GG Copy of a condensed version of the Deposition of Hanspeter Witschi, M.D., the first page is marked Bates No. PX-KEP-000952 ..... 259

535HH Two-inch stack of publications on which Dr. Pinkerton is an author; Bates Nos. PX-KEP-000155 - 570 .... 259

537 Five-page article entitled "Decreased Fetal Weights in Rats Exposed to Sidestream Cigarette Smoke" authored by Rajini, and others 300

538 Declaration of Kent E. Pinkerton, Ph.D. in Support of Reply to Defendants' Opposition to Plaintiff's Motion for Preliminary Injunction, containing handwritten notations on its face; Bates Nos. PX-JPJ-000169 - 199 308

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Source: https://www.industrydocuments.ucsf.edu/docs/gsgl0001

)
12 The People of the State of )
California, et al., v. Brown & )
13 Williamson Tobacco Corp., et al., )
San Francisco Superior Court )
14 Case No. 996781; )
)
15 The People of the State of )
California, et al. v. Tobacco )
16 Exporters, et al., San Francisco )
Superior Court Case No. 301631. )
17 )
18 --oOo--
19 BE IT REMEMBERED that, pursuant to Notice and
20 on Tuesday, May 23, 2000, commencing at 8:43 a.m.
21 thereof, at 2520 Ventura Oaks Way, Suite 220,
22 Sacramento, California, before me, CLARE MACY, a
23 Certified Shorthand Reporter, personally appeared
24 KENT E. PINKERTON, Ph.D.
25 _____
26 called as a witness by the Defendant, who, having been
27 first duly sworn, was further examined and testified as
28 follows:



1 APPEARANCES OF COUNSEL
2 For the Plaintiffs the People of the State of California
and American Environmental Safety Institute and the
3 witness:
4 PRESTON GATES & ELLIS, LLP
BY: BRIAN K. BROOKEY, Attorney at Law
5 725 S. Figueroa Street, Suite 2100
Los Angeles, CA 90017
6 Telephone: (213) 624-2395
7 For the Defendant Philip Morris, Incorporated:
8 MUNGER, TOLLES & OLSON LLP
BY: PATRICK J. CAFFERTY, JR., Attorney at Law
9 33 New Montgomery Tower, 19th Floor
San Francisco, CA 94105-9781
10 Telephone: (415) 512-4012
11 For the Defendant Philip Morris, Incorporated:
12 SHOOK, HARDY & BACON LLP
BY: CURTIS J. BRAUKMANN, Attorney at Law
13 One Kansas City Place, 1200 Main Street
Kansas City, Missouri 64105-2118
14 Telephone: (816) 474-6550
15 For the Defendant R.J. Reynolds Tobacco Company:
16 WOMBLE CARLYLE SANDRIDGE & RICE
BY: NEIL D. KODSI, Attorney at Law
17 200 West Second Street, P.O. Box Drawer 84
Winston-Salem, North Carolina 27102
18 Telephone: (336) 721-3604
19 For the Defendant Liggett Group, Inc.:
20 POST KIRBY NOONAN & SWEAT LLP
BY: JEFFREY P. LENDRUM, Attorney at Law
21 America Plaza, Suite 1100, 600 West Broadway
San Diego, California 92101-3302
22 Telephone: (619) 231-8666
23 For the Defendant Brown & Williamson Tobacco
Corporation:
24
SEDGWICK, DETERT, MORAN & ARNOLD
25 By: SHELLEY L. BRITTMAN, Attorney at Law
One Embarcadero Center, 16th Floor

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San Francisco, California 94111-3628
Telephone: (415) 781-7900

ALSO PRESENT: DAVID JENSEN, Videographer



08:30:51 P R O C E E D I N G S
08:43:53 VIDEO OPERATOR: Here begins videotape No. 4
08:43:58 in the deposition of Kent Pinkerton. Today's date is
08:44:01 May 23rd, 2000. The time on the video monitor is 8:43.
08:44:06 All who were present at the May 22nd session are present
08:44:10 today. Please begin.
08:44:12 EXAMINATION BY MR. KODSI
08:44:12 MR. KODSI: Good morning, Dr. Pinkerton.
08:44:14 A. Good morning.
08:44:15 Q. What I'd like to start doing today is where
08:44:18 we left off yesterday is we had identified Exhibit 535
08:44:23 as the documents that came from your file in this case,
08:44:27 and I'd like to start going through those with you. And
08:44:30 I think -- I don't know if it's the easiest or best way,
08:44:37 but the way I figure we ought to do it is the page
08:44:40 that's marked "Exhibit 535" that says "Expert File of
08:44:43 Kent Pinkerton" is -- there's nothing material on there
08:44:46 other than identifying what the file is. The next
08:44:50 document, if we could mark as 535A.
(Whereupon, Defendant's Exhibit 535A
was marked for identification.)
08:45:13 MR. KODSI: And just because of the
08:45:15 voluminous nature of the file, I only have the one copy
08:45:18 for the witness and one copy for me. I apologize to
08:45:21 everyone else in this room. Brian, hopefully you have
08:45:26 some of these, or you can look over his shoulder.
08:45:27 Q. Let's begin, why don't you tell me what
08:45:29 Exhibit 535A is.



08:45:30 A. This is a table from the California E.P.A.
08:45:34 book on health effects of environmental tobacco smoke.
08:45:40 It's Table ES.1, Health Effects Associated with Exposure
08:45:45 to Environmental Tobacco Smoke, which includes many of
08:45:50 the different effects that have been causally associated
08:45:55 with ETS exposure, including both developmental as well
08:46:00 as respiratory, cardiogenic and cardiovascular effects.
08:46:06 Q. How did this document get into your file? Is
08:46:10 this something that you put in there, or was it sent to
08:46:13 you?
08:46:13 A. I actually have the book for the California
08:46:16 E.P.A. health effects of environmental tobacco smoke.
08:46:20 And so this table is simply a good summary of things
08:46:25 that are causally associated with environmental tobacco
08:46:28 smoke in terms of health effects. And also, it also
08:46:32 lists some things that are suggestive evidence of causal
08:46:37 association with -- environmental tobacco smoke
08:46:40 association.
08:46:41 Q. So would actually the entire Cal E.P.A.
08:46:44 report be something that was in your file or just this
08:46:48 one page?
08:46:49 A. The entire book is in my file.
08:46:53 Q. I know that Exhibit 535A has a fax from the
08:47:00 Thorsnes firm up top. Is that the way -- does your file
08:47:03 version have that fax or --
08:47:04 A. No.
08:47:07 MR. BROOKEY: Just to avoid any confusion,
08:47:10 Mr. Kodsi, yesterday during the course of the deposition

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08:47:13 1 this was a fax that I received from Mr. McGuire. I
08:47:16 2 believe the entire Cal E.P.A. study was marked
08:47:19 3 previously as an exhibit to Dr. Witschi's deposition and
08:47:23 4 may have been missing this one page. So this was added
08:47:26 5 yesterday to Exhibit 535.
08:47:28 6 MR. KODSI: Okay. Great. Thank you for that
08:47:31 7 clarification.
08:47:32 8 Q. Are you relying on this Exhibit 535A for any
08:47:38 9 of the opinions you intend to offer in this case?
08:47:40 10 A. Yes.
08:47:41 11 Q. And what are you relying on that for?
08:47:45 12 A. Just -- it's a very nice summary of health
08:47:49 13 effects associated with environmental tobacco smoke
08:47:53 14 exposures, primarily in children, that I would like to
08:47:57 15 refer to.
08:47:59 16 Q. Are you relying on the Cal E.P.A. report for
08:48:03 17 those opinions?
08:48:04 18 A. Only for those parts that talk about the
08:48:08 19 epidemiological studies. And if there are supporting
08:48:10 20 animal studies, I would like to use those, also.
08:48:15 21 Q. When you say you'd like to use them, have you
08:48:18 22 read the actual studies themselves, or are you just
08:48:20 23 relying on Cal E.P.A.'s interpretation?
08:48:23 24 A. I've read the studies.
08:48:25 25 Q. What about with respect to the epidemiology
08:48:26 26 studies cited in the Cal E.P.A. report? Have you read
08:48:29 27 the studies themselves, or are you relying on Cal
08:48:31 28 E.P.A.'s interpretation?



08:48:32 1 A. I have not read all of the studies.
08:48:35 2 Q. You've read --
08:48:35 3 A. I've read a number of them.
08:48:44 4 Q. Let's move on to -- Let's mark this 535B.
5 (Whereupon, Defendant's Exhibit 535B
6 was marked for identification.)
08:49:13 7 MR. KODSI: Q. Let me ask you if you
08:49:14 8 recognize that document.
08:49:17 9 A. Yes. It's the declaration of Dr. Jesse Joad.
08:49:33 10 Q. I think we talked about this yesterday, but
08:49:36 11 did you play any role in assisting Dr. Joad in drafting
08:49:40 12 this declaration?
08:49:40 13 A. No.
08:49:42 14 Q. Let's turn to page 6. On page 6 of Exhibit
08:49:54 15 535B, paragraph 18, the words "may have" have been
08:50:01 16 circled, and then there's a little number one on the
08:50:09 17 right-hand corner of that. Is that your handwriting?
08:50:11 18 A. No.
08:50:12 19 Q. Do you know whose handwriting that is?
08:50:13 20 A. No.
08:50:15 21 Q. Do you know why the words were circled?
08:50:19 22 A. If this is similar to my deposition, it's
08:50:23 23 because of the nature of that terminology and what I
08:50:29 24 assume Dr. Joad meant when she said "may have increased
08:50:34 25 airway responsiveness."
08:50:35 26 Q. What do you assume Dr. Joad meant when she
08:50:39 27 said "may have increased airway responsiveness"?
08:50:41 28 MR. BROOKEY: Objection. Calls for



08:50:42 1 speculation. He can answer.
08:50:44 2 THE WITNESS: Since I didn't help Dr. Joad
08:50:47 3 prepare this declaration, I'm not absolutely sure.
08:50:54 4 MR. KODSI: Q. Who provided you this copy of

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08:50:57 her declaration with those words circled?
08:51:02 A. Frankly, I don't remember seeing this
08:51:05 particular -- I've seen a draft of her declaration, but
08:51:10 I've not seen it in this format.
08:51:12 Q. So this is -- What I'm showing you now is the
08:51:15 first time you've ever seen this version with the words
08:51:17 "may have" circled?
08:51:18 A. That's correct.
08:51:19 Q. We can make this probably fairly quick. If
08:51:22 you turn to page 7 where the word at the top "suggests"
08:51:27 is circled, this is the first time you've seen that as
08:51:30 well?
08:51:30 A. Yes.
08:51:32 Q. On page 9 there's some words circled there,
08:51:35 and it is the first time you've seen that as well?
08:51:38 A. That's correct.
08:51:38 Q. Same on page 10. It's the first time you've
08:51:40 seen those words circled?
08:51:42 A. Yes.
08:51:42 Q. Page 11, the first time you've seen those
08:51:45 words circled?
08:51:46 A. Yes.
08:51:52 Q. That's all we need to go over with that.
08:51:55 This is the next one, 535C.



(Whereupon, Defendant's Exhibit 535C
was marked for identification.)
08:52:34 MR. KODSI: Q. Dr. Pinkerton, you've been
08:52:37 handed what's been marked as Exhibit 535C. Do you
08:52:41 recognize that document?
08:52:42 A. Yes.
08:52:42 Q. What is that?
08:52:44 A. This is the contract for my research that was
08:52:47 funded by the Center for Indoor Air Research.
08:52:50 Q. And on top of that contract appears to be a
08:52:55 facsimile from a Kimberly Lamar to Roger Carrick.
08:52:59 A. Yes.
08:53:00 Q. Who is Kimberly Lamar?
08:53:01 A. She's our grants administrative assistant at
08:53:03 the Institute of Toxicology and Environmental Health at
08:53:06 the University of California, Davis.
08:53:09 Q. And did she send this contract to Mr. Carrick
08:53:15 at your instruction?
08:53:16 A. Yes.
08:53:17 Q. Did you instruct her to specifically
08:53:19 reference the confidentiality clause on page 4 of the
08:53:23 contract?
08:53:23 A. No.
08:53:24 Q. Do you know why she referenced the
08:53:27 confidentiality clause on page 4 of the contract?
08:53:29 A. Simply because it was the only part of the
08:53:32 contract that discussed confidentiality issues.
08:53:35 Q. Why were you concerned about confidentiality



08:53:38 issues?
08:53:40 MR. BROOKEY: Objection, lacks foundation.
08:53:42 THE WITNESS: My only concern was to make
08:53:45 sure that if I became an expert witness, that research
08:53:50 that I performed under this funding support would be
08:53:55 admissible by the Center for Indoor Air Research
08:53:59 contract terms.
08:54:00 MR. KODSI: Q. All right. That's fine.
08:54:02 Great. Let's go on to the next one, 535D.

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10 (Whereupon, Defendant's Exhibit 535D
11 was marked for identification.)
08:54:34 12 MR. KODSI: Q. Dr. Pinkerton, you've been
08:54:37 13 handed what's been marked as Exhibit 535D. Let me ask
08:54:42 14 if you recognize that.
08:54:43 15 A. Yes.
08:54:44 16 Q. This is a fax from you to -- I guess, is it
08:54:47 17 Carolyn Sieve and Roger Carrick?
08:54:49 18 A. Yes.
08:54:50 19 Q. Regarding an abstract of a presentation you
08:54:54 20 gave in March?
08:54:55 21 A. That's correct.
08:54:59 22 Q. Did Mr. Carrick request that you send this
08:55:03 23 abstract?
08:55:03 24 A. No.
08:55:04 25 Q. Why did you send this abstract?
08:55:06 26 A. Ms. Sieves knew that I was going to be giving
08:55:10 27 a talk at this national meeting for the Society of
08:55:14 28 Toxicology and requested the abstracts for all of the



08:55:19 1 speakers for that session.
08:55:20 2 Q. Are you relying on these abstracts for any
08:55:24 3 opinions you intend to offer in this case?
08:55:26 4 A. The abstract that is my own represents the
08:55:31 5 research that I am relying on.
08:55:34 6 Q. Has that research been subsequently published
08:55:38 7 other than in the abstract?
08:55:41 8 A. Portions of this abstract have been
08:55:43 9 published.
08:55:57 10 I would also say that since these are
08:55:59 11 abstracts and they're not peer-reviewed, that's why I
08:56:03 12 wouldn't rely much on these specific abstracts for any
08:56:07 13 kind of testimony.
08:56:09 14 Q. To the extent that there's an abstract that
08:56:13 15 you're not a co-author on, you wouldn't be comfortable
08:56:22 16 relying on it if it hasn't been peer-reviewed?
08:56:25 17 A. That's correct.
08:56:26 18 Q. That we don't need anymore.
08:56:27 19 Let's go to 535E.
20 (Whereupon, Defendant's Exhibit 535E
21 was marked for identification.)
08:56:40 22 MR. KODSI: Q. This is what I'm going to
08:56:42 23 need your help walking me through. First of all, you've
08:56:46 24 been handed what's been marked as Exhibit 535E. Do you
08:56:49 25 recognize this document?
08:56:51 26 A. Yes.
08:56:52 27 Q. That's a fax from you to Carolyn Sieve in
08:56:55 28 September of 1999?



08:56:56 1 A. Yes.
08:56:57 2 Q. Correct?
08:56:58 3 And you sent her some tables and figures from
08:57:00 4 a children's workshop paper that you did?
08:57:02 5 A. That's correct.
08:57:05 6 Q. Could you describe for me what -- before we
08:57:08 7 talk about Exhibit 535E, who sponsored this children's
08:57:12 8 workshop?
08:57:13 9 A. The U.S. Environmental Protection Agency.
08:57:18 10 Q. And that was when?
08:57:21 11 A. In September of 1999 in Richmond, Virginia.
08:57:28 12 Q. We talked about that yesterday?
08:57:30 13 A. Yes.
08:57:31 14 Q. Okay. And in addition to these tables that

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08:57:35 15 are attached to Exhibit 535E, did you present any other
08:57:40 16 materials at that workshop?
08:57:43 17 A. I presented a written report.
08:57:46 18 Q. Is that written report contained in your file
08:57:50 19 in this case?
08:57:51 20 A. It actually was included as part two of my
08:57:54 21 declaration.
08:57:55 22 Q. So the written report that you presented at
08:58:00 23 this E.P.A. workshop is the language we talked about
08:58:04 24 yesterday you incorporated on page 16 to the end of your
08:58:07 25 declaration?
08:58:08 26 A. That's correct.
08:58:10 27 Q. I'd like to go through this with you. Let's
08:58:17 28 look at Table 1 of Exhibit 535E. What is that table



08:58:29 1 explaining?
08:58:29 2 A. This is a table that talks about the
08:58:32 3 development of the fetal lungs for a variety of
08:58:34 4 mammalian species, and it discusses the time frame in
08:58:38 5 which different phases of development occur to compare
08:58:44 6 among the different species listed.
08:58:49 7 Q. So this table explains the differences
08:58:52 8 between the human lung and various animal species that
08:58:56 9 you may have conducted animal experiments on?
08:59:00 10 A. That is correct. It is for purposes of
08:59:07 11 comparison among species.
08:59:09 12 Q. And so according to this table, for
08:59:12 13 example -- why don't you explain to me what the Term
08:59:18 14 column means, what we're looking at there? You've
08:59:23 15 got -- Species on the far left column indicates the
08:59:25 16 animal that you're discussing in the table?
08:59:27 17 A. That's correct.
08:59:28 18 Q. What is the term showing us?
08:59:31 19 A. Term is the normal or average gestational
08:59:35 20 period for development of the fetus in terms of days.
08:59:49 21 Q. Does that relate just to the overall
08:59:52 22 gestational period of the fetus, or does that relate to
08:59:55 23 some term of lung development?
08:59:56 24 A. It relates to the overall gestational period
09:00:00 25 of the fetus.
09:00:02 26 Q. And what is the Embryonic column referring us
09:00:07 27 to?
09:00:07 28 A. This is the first phase in which the lung



09:00:10 1 actually appears, and this column designates at what
09:00:16 2 gestational day of age that the formation of the lungs
09:00:22 3 begins in the embryonic phase.
09:00:25 4 Q. So does that mean that in humans the lungs
09:00:29 5 begin to develop after 40 -- after the 42nd day of the
09:00:37 6 gestational period approximately?
09:00:38 7 A. That is correct. Actually, the less than
09:00:41 8 sign designates that it occurs before the 42nd day.
09:00:46 9 Q. So for mice, the lung begins to develop
09:00:50 10 before the 9th day in the gestational period?
09:00:53 11 A. That is correct.
09:00:53 12 Q. And the same would work for the other animals
09:00:58 13 in there?
09:00:58 14 A. Yes.
09:00:59 15 Q. Great. There is a column that indicates
09:01:01 16 "pseudoglandular." What is that column showing us?
09:01:04 17 A. This is the second phase of development for
09:01:06 18 the lungs. This is a period of time in which the lungs
09:01:10 19 increase significantly in tissue mass in which there is

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09:01:14 20 formation of epithelial tubules that will form the
09:01:20 21 future airways that are embedded, enmeshed in a
09:01:24 22 mesenchyme that eventually will form supporting tissue
09:01:29 23 structures and eventually the alveolar or gas exchange
09:01:32 24 portions of the lung.
09:01:34 25 Q. And the same thing for that column; those
09:01:38 26 developments in humans occur between the 52nd and the
09:01:42 27 112th day?
09:01:43 28 A. Approximately.



09:01:47 1 Q. And in the mice, for example, they occur
09:01:49 2 approximately around the 16th day?
09:01:51 3 A. That is correct.
09:01:52 4 Q. What about the -- I'll let you pronounce that
09:01:56 5 one because I'm sure I'll mispronounce it.
09:01:59 6 A. This is the next phase of fetal lung
09:02:01 7 development, canalicular.
09:02:03 8 Q. That's the --
09:02:04 9 A. This is a phase --
09:02:05 10 Q. -- fifth column?
09:02:06 11 A. That's correct.
09:02:07 12 It's during this gestational period that
09:02:12 13 there continues to be further growth of the lungs and
09:02:17 14 the eventual formation of beginning air spaces.
09:02:25 15 Q. And saccular, which is the last column?
09:02:28 16 A. This is the final phase of gestational
09:02:32 17 growth, although there is one other one not listed here
09:02:38 18 that is found on the following table, but saccular again
09:02:44 19 refers to an exponential expansion of the lungs. This
09:02:49 20 typically occurs just prior to term of the gestational
09:02:56 21 period, although it may be a little bit different from
09:02:59 22 one species to the next.
09:03:02 23 Q. Okay. Let me ask you if I'm interpreting
09:03:07 24 something correctly in here. Let's go back to your
09:03:10 25 description of the embryonic development. In humans,
09:03:14 26 embryonic development occurs approximately -- and I
09:03:25 27 don't know if percentages are the right things to use,
09:03:30 28 so bear with me -- in the first 20 percent of the time



09:03:32 1 that the animal is -- that the human animal is in the
09:03:35 2 womb?
09:03:37 3 A. That is correct.
09:03:38 4 Q. Is that a fair way to characterize that?
09:03:39 5 A. Yes.
09:03:40 6 Q. So the human embryonic development occurs
09:03:43 7 very early on in fetal development in a human?
09:03:47 8 A. That is correct.
09:03:48 9 Q. In the rat, the embryonic development doesn't
09:03:53 10 occur until more than halfway through the amount of time
09:03:57 11 that the fetus is spending in the womb?
09:04:00 12 A. That is correct.
09:04:01 13 Q. And so am I interpreting that correctly?
09:04:03 14 A. Uh-huh.
09:04:03 15 Q. And would that really be true for all of
09:04:05 16 these developmental phases we're talking about, that the
09:04:08 17 human fetus develops at an earlier stage than the other
09:04:14 18 animals in this table?
09:04:19 19 A. The primate species, which includes humans,
09:04:24 20 but also monkeys shows similar phases in terms of
09:04:30 21 their -- when each of these phases first occur during
09:04:34 22 fetal development.
09:04:35 23 Q. Good point. And that is what I was going to
09:04:39 24 head to next. I should have asked the question better.

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09:04:42 25 With respect to the rat, human development -- human
09:04:46 26 fetal development of the lung occurs at a much earlier
09:04:51 27 phase than with respect to rat fetal development?
09:04:57 28 A. That is correct.



09:04:58 1 Q. And that's correct for all of the factors
09:05:01 2 that we've just talked about in Table 1?
09:05:05 3 A. With the exception that the canalicular and
09:05:11 4 saccular phases tend to be in the same general period of
09:05:18 5 development.
09:05:19 6 Q. They're closer than some of the others, but
09:05:22 7 it's still earlier in the human than the rat for the
09:05:26 8 canalicular phase?
09:05:27 9 A. That's correct.
09:05:28 10 Q. You had indicated that we have some more
09:05:30 11 developmental issues to talk about on Table 2, if you
09:05:33 12 could explain to me what Table 2 is showing us.
09:05:36 13 A. Table 2 again shows the formation of alveoli
09:05:42 14 in the lungs for a variety of different mammalian
09:05:48 15 species. It indicates in the first column the species;
09:05:53 16 in the second column the onset of alveolar formation,
09:05:58 17 and in the third and final column the average time of
09:06:03 18 completion of alveolarization of the lungs.
09:06:15 19 Q. Okay. Let's go to Figure 1, and we have a
09:06:24 20 black and white copy. I'm assuming that maybe your file
09:06:28 21 copy -- Figure 1, your Table 1. I'm sorry, Figure 1 is
09:06:34 22 the next page of Exhibit 535E. I assume that maybe your
09:06:38 23 file copy might be in color; is that correct?
09:06:40 24 A. It is actually in black and white, but much
09:06:42 25 better quality.
09:06:43 26 Q. Much better quality. Could you just briefly
09:06:47 27 describe for me what that would show if we could maybe
09:06:51 28 see it a little bit clearer?



09:06:53 1 A. This is a light micrograph of the fetal lung,
09:06:57 2 showing alveolar septation. And actually, this alveolar
09:07:01 3 septation is also a very prominent postnatal event in
09:07:06 4 lung development.
09:07:08 5 Q. And which animal is Figure 1 showing alveolar
09:07:13 6 septation in?
09:07:14 7 A. This is in the porcine lung, or pig.
09:07:21 8 Q. What is Figure 2 showing us on the next page?
09:07:26 9 A. This is a flow chart to show the
09:07:30 10 differentiation of tracheal epithelium for a variety of
09:07:34 11 mammalian species. The trachea is the primary
09:07:40 12 conducting airway from the upper respiratory tract down
09:07:44 13 to the bronchial tree. And it is showing the pattern of
09:07:52 14 differentiation from undifferentiated columnar epithelia
09:07:58 15 cells into the different epithelial cell types that
09:08:03 16 are -- will eventually be present in the mature lung.
09:08:08 17 Q. And this table is showing us the differences
09:08:12 18 between that differentiation for humans versus the same
09:08:15 19 animal species that we've been talking about --
09:08:18 20 A. That is correct.
09:08:19 21 Q. -- before.
09:08:19 22 Okay. Now, let's look at Figure 3, if you
09:08:25 23 could just explain for me what that figure is showing.
09:08:29 24 A. This is a line graph showing
09:08:32 25 methacholine-induced changes in airway resistance for
09:08:39 26 the isolated perfused lungs from rats that had been
09:08:45 27 exposed under different conditions during in utero and
09:08:49 28 postnatal phases of lung development. These exposures



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09:08:54 1 are a combination of filtered air or exposure to
09:09:04 2 sidestream cigarette smoke.
09:09:08 3 It is shown that there are actually four
09:09:11 4 different groups that are in this graph: one group that
09:09:16 5 is exposed only to filtered air in utero and
09:09:19 6 postnatally, which would be the control animals; a group
09:09:23 7 of animals exposed in utero to filtered air but
09:09:26 8 postnatally to sidestream cigarette smoke; a third group
09:09:31 9 that is exposed only in utero to sidestream smoke but
09:09:36 10 postnatally only to filtered air; and the fourth group
09:09:40 11 is showing animals that were exposed in utero and
09:09:44 12 postnatally to sidestream cigarette smoke.
09:09:47 13 Q. And what you're referring to there is in
09:09:50 14 Figure 3 in the left-hand corner of the graph you have
09:09:54 15 up top FA/FA, and that would represent the group that
09:09:59 16 was exposed to filtered air both post and -- both pre-
09:10:03 17 and postnatally, and the second group there, FA/SS, is
09:10:07 18 the group that was exposed to filtered air prenatally
09:10:10 19 and sidestream smoke postnatally?
09:10:14 20 A. That is correct.
09:10:15 21 Q. And we could obviously interpret the rest the
09:10:17 22 same way?
09:10:17 23 A. Uh-huh.
09:10:18 24 Q. Okay, great. What is methacholine -- what
09:10:21 25 are methacholine induced changes in resistance?
09:10:24 26 A. Methacholine is a pharmacological agent that
09:10:29 27 is used classically to test airway sensitivity. It is a
09:10:36 28 drug that's used typically in the clinic for human



09:10:43 1 studies. It's a good marker for not only airway
09:10:48 2 sensitivity but the detection of the degree of an
09:10:50 3 asthmatic condition that an individual may have.
09:10:55 4 Q. But it's possible to have
09:10:57 5 methacholine-induced changes that do not necessarily
09:11:00 6 result in any adverse health effect?
09:11:03 7 A. That is correct. What this is showing is
09:11:06 8 that given enough of a dose of methacholine, you'll have
09:11:10 9 airway hyperreactivity occur.
09:11:13 10 Q. Let's look at Figure 4. What is Figure 4
09:11:18 11 showing us?
09:11:19 12 A. This is a bar graph showing the frequency or
09:11:24 13 number of epithelial cells defined as neuroendocrine
09:11:29 14 cells in the lung airways of those animals that were
09:11:35 15 physiologically tested for methacholine challenges in
09:11:39 16 the previous figure.
09:11:41 17 This shows that there are differences in the
09:11:47 18 number of neuroendocrine cells present per centimeter of
09:11:52 19 basal lamina of airway length based on the exposure
09:11:56 20 conditions that these animals were subjected to, with
09:12:01 21 the filtered air control animals showing the smallest
09:12:05 22 numbers of neuroendocrine cells per centimeter basal
09:12:09 23 lamina, and those animals exposed both pre- and
09:12:12 24 postnatally to sidestream cigarette smoke as having the
09:12:16 25 highest number of neuroendocrine cells per centimeter
09:12:25 26 basal lamina length within the airways of these animals.
27 (Reporter interrupted)
09:12:36 28 Q. What is the significance of having increased



09:12:39 1 neuroendocrine cells?
09:12:46 2 A. It is thought that increased numbers of
09:12:49 3 neuroendocrine cells are associated with a number of
09:12:54 4 diseases of the lungs that include bronchopulmonary
09:13:03 5 dysplasia, asthma, airway hyperreactivity. The --

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09:13:14 6 Q. Is there a baseline level for neuroendocrine
09:13:17 7 cells that you look for?
09:13:20 8 A. Typically, the number of neuroendocrine cells
09:13:23 9 that would be present in the airways would be less than
09:13:27 10 one-half of 1 percent of the total population of
09:13:30 11 epithelial cells.
09:13:31 12 Q. Now, this table here on Figure 4 tells us the
09:13:37 13 number of neuroendocrine cells per centimeter?
09:13:39 14 A. That's correct.
09:13:40 15 Q. Is there a way to convert that to percentage?
09:13:45 16 A. Yes.
09:13:46 17 Q. Is that something that you've done?
09:13:49 18 A. We've actually used a new technique.
09:13:53 19 Rather -- This type of method is actually derived by
09:13:57 20 taking tissues, embedding them into paraffin or plastic,
09:14:04 21 and then cutting sections. And for immunohistochemical
09:14:09 22 staining, you can actually stain for these specific
09:14:13 23 neuroendocrine cells using antibodies that are directed
09:14:16 24 against antigens that are expressed only or at least by
09:14:20 25 these cells and not other epithelial cells.
09:14:24 26 What we've -- So if we look at these kind of
09:14:29 27 values, we can just compare them across as long as we do
09:14:34 28 exactly the same thing with our control group as we do



09:14:37 1 with our treatment group.
09:14:39 2 But our new methodology is to actually
09:14:41 3 isolate the entire airway, do whole mount
09:14:46 4 immunohistochemistry, and we can literally count every
09:14:51 5 neuroendocrine cell that is stained positively with the
09:14:55 6 antibody that we are using as a marker for that cell
09:14:58 7 type. And in that way, we can express the values for
09:15:02 8 the entire airways.
09:15:08 9 Q. Now, you indicated that there is a --
09:15:16 10 scientist's view one-half of 1 percent neuroendocrine
09:15:20 11 cells as a baseline to shoot for. Is that a proper way
09:15:25 12 to say that?
09:15:27 13 A. That's what typically would be found in a
09:15:30 14 normal lung.
09:15:34 15 Q. It's possible to have neuroendocrine cells
09:15:38 16 that are 1 percent that don't lead to adverse health
09:15:44 17 effects?
09:15:45 18 A. That is correct.
09:15:46 19 Q. And looking at Figure -- well, and it's
09:15:51 20 possible to actually have neuroendocrine cells
09:15:54 21 approaching 2 to 3 percent that also don't lead to
09:15:57 22 adverse health effects?
09:15:58 23 A. That is correct.
09:15:59 24 Q. Is there a percentage level in your mind
09:16:04 25 where you would say would automatically lead to adverse
09:16:08 26 health effects?
09:16:08 27 A. No.
09:16:09 28 Q. I'm looking at Figure 4. You indicated that



09:16:11 1 the animals exposed to fresh air and sidestream smoke or
09:16:16 2 sidestream smoke and then fresh air had higher levels
09:16:24 3 than the animals that were just exposed to fresh air?
09:16:26 4 A. That is correct.
09:16:27 5 Q. For those first three columns in Figure 4, is
09:16:29 6 there a statistically significant difference between
09:16:31 7 those levels?
09:16:31 8 A. No.
09:16:32 9 Q. The only statistically significant difference
09:16:33 10 you found were in the animals exposed to sidestream

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09:16:36 11 smoke both pre- and postnatally?
09:16:37 12 A. That is correct.
09:16:38 13 Q. And that's as indicated in Figure 4?
09:16:40 14 A. Yes.
09:16:43 15 Q. Let's flip over to Figure 5. What is Figure
09:16:50 16 5 showing us?
09:16:53 17 A. This is a line graph showing the
09:16:57 18 methacholine-induced changes in lung resistance for two
09:17:02 19 different groups of animals: One representing filtered
09:17:04 20 air control animals; another one representing animals --
09:17:09 21 these are Sprague-Dawley rats that were exposed pre- and
09:17:15 22 postnatally to sidestream cigarette smoke until they
09:17:20 23 were 21 days of postnatal age. Then they were
09:17:24 24 maintained -- all animals were maintained in filtered
09:17:28 25 air for five weeks beyond this particular time. And
09:17:34 26 then at eight weeks of age, the animals were examined
09:17:38 27 for lung resistance by using an isolated lung perfusion
09:17:43 28 system and measuring changes in lung resistance based on



09:17:52 1 increasing doses of methacholine challenge.
09:17:57 2 Q. If you flip back to Figure 3, it has the same
09:18:02 3 title as Figure 5. Is Figure 5 showing us the same data
09:18:07 4 we discussed as for Figure 3?
09:18:10 5 A. It is the same type of test.
09:18:12 6 Q. Just a different set of data?
09:18:14 7 A. That's correct.
09:18:16 8 Q. And on the x-axis of both Figures 3 and 5,
09:18:23 9 you're showing the methacholine dose in a log mole? Is
09:18:30 10 that what the x-axis is showing us?
09:18:31 11 A. That is correct.
09:18:32 12 Q. What is the y-axis showing us on those two
09:18:36 13 figures?
09:18:36 14 A. This is the percent change from the original
09:18:39 15 baseline values.
09:18:43 16 Q. So we're on Figure -- let me go back to
09:18:46 17 Figure 5. The 1,000 means a 1,000 percent change that's
09:18:50 18 on the y-axis?
09:18:51 19 A. That is correct.
09:18:52 20 Q. I noticed on Figure 5 that you had a graph
09:18:57 21 for ADSS. Is that aged and diluted sidestream smoke?
09:19:03 22 A. That is correct.
09:19:04 23 Q. Is there a reason that the previous graphs
09:19:06 24 refer to SS instead of ADSS?
09:19:12 25 A. It is exactly the same.
09:19:15 26 Q. You did that because there was more room here
09:19:18 27 to write it out?
09:19:20 28 A. That is correct. And also, Dr. Joad and I



09:19:25 1 have used SS and ADSS interchangeably in many of our
09:19:30 2 publications.
09:19:34 3 Q. Let's talk about the next page of Exhibit
09:19:40 4 535E. It doesn't have a figure number, but it's at the
09:19:44 5 top titled "Respiratory Effects Associated with Timing
09:19:47 6 of Exposure."
09:19:48 7 A. Yes.
09:19:48 8 Q. What is that table showing us?
09:19:51 9 A. This is a table that we wished to put
09:19:58 10 together to talk about respiratory effects that may be
09:20:02 11 associated with the timing of exposure to any type of
09:20:07 12 environmental air pollutant.
09:20:09 13 Q. You said something in there -- you said "we."
09:20:12 14 Is this a table you prepared with someone -- are the
09:20:16 15 tables we've been going through tables you prepared with

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09:20:19 16 someone else?
09:20:20 17 A. Yes. Dr. Joad.
09:20:21 18 Q. This is something that both of you worked on
09:20:24 19 together?
09:20:24 20 A. Yes.
09:20:24 21 Q. Did she join you in this workshop, childhood
09:20:27 22 workshop, at the E.P.A.?
09:20:29 23 A. No.
09:20:29 24 Q. She helped you prepare for the presentation?
09:20:33 25 A. She helped in editing the write-up.
09:20:38 26 Q. And helped in editing and reviewing the
09:20:42 27 tables that we are going through now?
09:20:44 28 A. That is correct.



09:20:44 1 Q. In Exhibit 535; correct?
09:20:47 2 A. Yes.
09:20:51 3 MR. BROOKEY: I think you meant 535E.
09:20:56 4 MR. KODSI: Thanks, Brian.
09:20:58 5 MR. BROOKEY: I'm sure there are other
09:20:59 6 tables.
09:20:59 7 MR. KODSI: You're right. 535E.
09:21:02 8 Q. So this page titled "Respiratory Effects
09:21:06 9 Associated with Timing of Exposure" is not specific to
09:21:10 10 environmental tobacco smoke?
09:21:12 11 A. It is not exclusive for environmental tobacco
09:21:16 12 smoke.
09:21:16 13 Q. It may apply to environmental tobacco smoke
09:21:19 14 but also applies to other exposures?
09:21:21 15 A. That is correct.
09:21:30 16 Q. Let's go to the next page which is titled
09:21:37 17 "Critical Windows of Exposure to Environmental Tobacco
09:21:40 18 Smoke." Why don't you show me or explain to me what
09:21:45 19 you're showing there.
09:21:46 20 A. This was a line diagram to try to summarize
09:21:51 21 the cumulative studies that Dr. Joad and I have done
09:21:57 22 looking at airway reactivity based on the timing for
09:22:01 23 exposures to environmental tobacco smoke during
09:22:05 24 perinatal lung development.
09:22:07 25 Q. And it's a chart that maps out these changes
09:22:12 26 from conception all the way through adulthood at the
09:22:16 27 bottom of the page?
09:22:17 28 A. Only to adolescence.



09:22:18 1 Q. I was going to ask you about that. There's
09:22:21 2 the word -- the last, at the end of the line at the
09:22:24 3 bottom of the page is the word "adult." And then above
09:22:27 4 "adult" are a series of question marks. What do those
09:22:32 5 question marks signify?
09:22:33 6 A. That at this point in time through our animal
09:22:37 7 studies we're not sure that the persistent airway --
09:22:41 8 increased airway sensitivity that we see in the
09:22:44 9 adolescent or young adult rat, how persistent those
09:22:49 10 changes may be, if they'll -- and so that is the reason
09:22:52 11 for the question mark.
09:22:54 12 Q. So in your animal studies, you have not yet
09:22:57 13 studied whether the effects you've seen carry on into
09:23:02 14 adulthood?
09:23:02 15 A. We've actually done studies in which we have
09:23:07 16 used very precise periods of exposure to environmental
09:23:11 17 tobacco smoke and then removed those animals from that
09:23:14 18 exposure condition for greater than that exposure period
09:23:18 19 time and found that there were still persistent
09:23:23 20 increases in airway reactivity as though we had never

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09:23:26 21 removed them from the exposures. But we have not done
09:23:31 22 any further studies to try to increase the post exposure
09:23:35 23 timing to see if -- how persistent these airway
09:23:40 24 hyperreactivity measures -- whether they would continue
09:23:44 25 to be persistent or not.
09:23:46 26 Q. And when you say continue to be persistent,
09:23:49 27 you mean continue to be persistent past adolescence?
09:23:51 28 A. That is correct.



09:23:52 1 Q. And when you talk about your experiments not
09:23:56 2 having looked at that persistence beyond adolescence,
09:24:00 3 are you aware of anyone else's animal experiments that
09:24:03 4 have looked at that issue?
09:24:05 5 A. No.
09:24:06 6 Q. And that's for all of the health effects that
09:24:09 7 we've talked about with respect to the opinions you
09:24:12 8 intend to offer in this case?
09:24:15 9 A. That is correct, including -- The reason for
09:24:19 10 this table is because of some of the epidemiological
09:24:24 11 studies that have been done with children who have grown
09:24:29 12 up in homes where smoking occurs or whether -- or they
09:24:34 13 have been exposed to environmental tobacco smoke, those
09:24:37 14 children in -- those studies that have gone on so far
09:24:41 15 only take those children to approximately 17 to 18 years
09:24:45 16 of age, and there are no other studies that have taken
09:24:50 17 it beyond that. So the questions that we have here
09:24:54 18 apply also to the human condition.
09:24:58 19 Q. You anticipated my next line of questions.
09:25:02 20 We just talked about the fact that there are no animal
09:25:06 21 studies that show the persistence of these effects into
09:25:10 22 adulthood. There, also, aren't any epidemiologic or
09:25:14 23 human studies that show the persistence of these effects
09:25:17 24 into adulthood?
09:25:18 25 A. That is correct.
09:25:18 26 Q. Okay. And looking at this page of Exhibit
09:25:23 27 535E entitled "Critical Windows," up at the top you have
09:25:28 28 "No Change in Airway Reactivity" for a column that runs



09:25:33 1 from conception to birth. What do you mean by that?
09:25:38 2 A. This is based on our animal studies that if
09:25:43 3 exposures occur from -- for gestation fresh, you'll see
09:25:49 4 that it isn't quite there. We started at gestation Day
09:25:52 5 Five and have maternal exposures to environmental
09:25:56 6 tobacco smoke up to but not before the birth of the
09:26:01 7 litter.
09:26:02 8 And then when we test those animals, they
09:26:07 9 would be in adolescence, and we see no change in airway
09:26:10 10 reactivity. So that's the meaning for that. It perhaps
09:26:16 11 is a little unclear on the table, but that's what that
09:26:20 12 designation means, is no change in airway reactivity not
09:26:23 13 measured in the fetal lung but measured in the
09:26:27 14 adolescent lung from those animals that were exposed
09:26:30 15 during that window of development.
09:26:32 16 Q. Okay. That was going to be my question. I
09:26:37 17 wanted to know when you tested them.
09:26:38 18 On the next line where you have "No Change in
09:26:41 19 Airway Reactivity," you're showing there that when you
09:26:43 20 looked at animals that were only exposed to ETS from
09:26:46 21 birth all the way through adolescence, you couldn't find
09:26:50 22 any change in airway reactivity?
09:26:51 23 A. Based on our studies that we've done to date,
09:26:54 24 we find that is correct.
09:26:55 25 Q. And again, could you -- how would you define

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09:26:58 26 adolescence in terms of the human model, at what age
09:27:02 27 range?
09:27:03 28 A. It can range from puberty to -- but



09:27:09 1 typically, we assume that it would be in the teenage
09:27:14 2 years.
09:27:14 3 Q. We're looking at somewhere between 13 and 18,
09:27:28 4 19?
09:27:29 5 A. Correct.
09:27:29 6 Q. Let's flip to the next page. It's also
09:27:31 7 entitled "Critical Windows of Exposure to Environmental
09:27:47 8 Tobacco Smoke." Is this table showing us anything
09:27:49 9 different than the one we just went over?
09:27:51 10 A. No. This is simply a different version that
09:27:53 11 we decided not to use.
09:27:55 12 Q. Okay. That's all I have on that exhibit.
09:27:58 13 Let's mark -- I think we're on 535F.
14 (Whereupon, Defendant's Exhibit 535F
15 was marked for identification.)
09:28:13 16 MR. KODSI: Q. Dr. Pinkerton, you've been
09:28:15 17 handed what has been marked as Exhibit 535F. Do you
09:28:20 18 recognize that?
09:28:20 19 A. Yes.
09:28:21 20 Q. What is this?
09:28:23 21 A. This is the declaration of Dr. Slotkin.
09:28:30 22 Q. And in addition to the declaration of
09:28:34 23 Dr. Slotkin, behind that are there also some -- a filing
09:28:41 24 in this case by the Brown & Williamson Tobacco
09:28:45 25 Corporation? Right after Dr. Slotkin's declaration.
09:28:59 26 Dr. Slotkin's declaration is about 11 pages.
09:29:04 27 A. Yes.
09:29:06 28 Q. And do you remember receiving Exhibit 535F



09:29:11 1 from Ms. Carolyn Sieve?
09:29:18 2 A. I don't distinctly remember it, but because
09:29:21 3 this is a fax showing that there were 61 pages faxed,
09:29:26 4 that would appear that these two documents must have
09:29:29 5 been sent to me at the same time.
09:29:32 6 Q. Now, she indicates that -- and I know this
09:29:36 7 was a long time ago, so we're going to try to tax your
09:29:44 8 memory. She indicates -- first of all, this was sent to
09:29:46 9 you on June 11, 1999, correct, as indicated by the fax
09:29:49 10 cover sheet?
09:29:50 11 A. Yes.
09:29:50 12 Q. And in Ms. Sieve's note to you on the fax
09:29:55 13 cover sheet she's indicates she's sending this to you as
09:29:58 14 a follow-up to your conversation this morning. She is
09:30:01 15 sending you Dr. Slotkin's report and Brown &
09:30:03 16 Williamson's supplemental responses to interrogatories.
09:30:06 17 Do you remember the conversation you had with her that
09:30:07 18 had her send these?
09:30:09 19 A. In general terms.
09:30:10 20 Q. Did you ask her to send you Dr. Slotkin's
09:30:15 21 report?
09:30:15 22 A. No.
09:30:16 23 Q. Did she indicate to you why she wanted you to
09:30:19 24 review it?
09:30:20 25 A. My recollection is that because I was about
09:30:24 26 to begin on my declaration, she wanted me to see an
09:30:28 27 example of how one is prepared.
09:30:32 28 Q. Did you review Dr. Slotkin's report for its



09:30:36 1 content?

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09:30:40 2 A. No more for -- To just understand how to put
09:30:49 3 one of these together. But because Dr. Slotkin's area
09:30:54 4 of discussion is different from mine, I didn't use it
09:31:01 5 for content for my own declaration.
09:31:05 6 Q. The facts from Ms. Sieve indicates that you
09:31:08 7 might be doing a joint report with Dr. Joad?
09:31:11 8 A. That is correct.
09:31:12 9 Q. Was that something that you considered early
09:31:15 10 on in this case?
09:31:16 11 A. Yes.
09:31:17 12 Q. And obviously, at some point you decided not
09:31:19 13 to do that. How come you decided to file separate
09:31:22 14 reports?
09:31:22 15 A. Because Dr. Joad and I were both so busy,
09:31:26 16 that we decided it would be easier for us each to work
09:31:30 17 on our own declaration, with the understanding that I
09:31:33 18 would cover health effects associated with animal models
09:31:39 19 and that she would dwell primarily on clinical aspects
09:31:43 20 of environmental tobacco smoke exposures in children.
09:31:47 21 Q. Is that based on your decisions as to where
09:31:52 22 each of your expertise fits in that you felt you had
09:31:54 23 more expertise on the animal studies than she did?
09:32:00 24 A. That's correct.
09:32:00 25 Q. And that she has more expertise on clinical
09:32:03 26 areas than you do?
09:32:04 27 A. Yes, since she is a physician and, in fact, a
09:32:07 28 pediatrician.



09:32:08 1 Q. Now, also, as we indicated, Ms. Sieve sent
09:32:14 2 you some Brown & Williamson interrogatory responses. Do
09:32:17 3 you recall why she sent you those?
09:32:20 4 A. No.
09:32:21 5 Q. Did you review those responses?
09:32:27 6 A. I probably looked at them, but I really don't
09:32:31 7 remember the content.
09:32:33 8 Q. If you look at the last sentence of the first
09:32:36 9 paragraph on the fax cover -- we're back on page 1
09:32:39 10 again -- she asks you to review the articles cited in
09:32:42 11 these responses and pay particular attention to certain
09:32:45 12 ones that she outlines for you. Do you remember
09:32:48 13 conducting that analysis that she requested?
09:32:50 14 A. No.
09:32:57 15 Q. Did you read the Brown & Williamson responses
09:33:02 16 in enough detail to form an impression of them?
09:33:04 17 A. No.
09:33:05 18 Q. Have you reviewed any other documents that
09:33:08 19 were filed by any of the defendants in this case?
09:33:13 20 A. No, I don't think so.
09:33:15 21 Q. If you had, it would be in the file that
09:33:17 22 you've provided us?
09:33:18 23 A. Yes.
09:33:19 24 Q. Okay. That's all I have on that one.
09:34:03 25 They're in different order.
09:34:19 26 Let's mark that as our 535G.
27 (Whereupon, Defendant's Exhibit 535G
28 was marked for identification.)



09:34:45 1 MR. KODSI: Q. Dr. Pinkerton, you've been
09:34:48 2 handed what's been marked as Exhibit 535G.
09:34:51 3 A. Yes.
09:34:52 4 Q. Is this a document you recognize?
09:35:07 5 A. No.
09:35:09 6 Q. Are you familiar with an F. Jay Murray from

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09:35:14 7 Murray & Associates?
09:35:15 8 A. Yes.
09:35:16 9 Q. Is he a doctor or --
09:35:20 10 Why don't you describe for me who he is.
09:35:24 11 A. I believe he is a doctor. He -- I met him
09:35:30 12 when we met with Dr. Nazaroff on April 19th in Berkeley.
09:35:39 13 And my impression is that he has expertise in toxicology
09:35:47 14 and serves as a consultant in toxicology.
09:35:52 15 Q. You indicated -- I think we talked yesterday
09:35:54 16 briefly about the meeting that you had with William
09:35:58 17 Nazaroff and Roger Carrick, and now Dr. Murray was
09:36:02 18 there. Was there anyone else at that meeting?
09:36:05 19 A. Carolyn Sieves and another attorney who works
09:36:11 20 with Dr. Carrick, David Sadwick. I'm not sure.
09:36:20 21 Q. Another attorney. Were there any other
09:36:23 22 scientists at that meeting?
09:36:23 23 A. No.
09:36:31 24 Q. What issues did you discuss with Dr. Murray
09:36:33 25 at that meeting?
09:36:34 26 A. I didn't personally discuss issues with him,
09:36:35 27 but he was there to discuss exposure assessment with
09:36:40 28 Dr. Nazaroff, also issues about thresholds for exposure.



09:36:52 1 And I think this had to do with issues with Proposition
09:36:57 2 65 and environmental tobacco smoke.
09:37:02 3 Q. Do you have an opinion as to whether in
09:37:07 4 conducting risk assessments on nicotine Dr. Murray or
09:37:12 5 Dr. Slotkin has more expertise?
09:37:14 6 A. Are you asking me who of those two would have
09:37:17 7 more expertise?
09:37:18 8 Q. (Nods head)
09:37:19 9 A. Because Dr. Slotkin has done many studies
09:37:25 10 with nicotine, I would assume that he would have more
09:37:29 11 knowledge about its health effects.
09:37:31 12 Q. Dr. Murray is not someone that you're real
09:37:36 13 familiar with?
09:37:37 14 A. That is correct.
09:37:38 15 Q. So it's possible that Dr. Murray actually has
09:37:40 16 more expertise, but you're just not sure?
09:37:43 17 A. That is correct.
09:37:44 18 Q. That's all I have on this one.
09:37:50 19 The next exhibit, we are on H.
20 (Whereupon, Defendant's Exhibit 535H
21 was marked for identification.)
09:38:11 22 MR. KODSI: Q. Now, this next exhibit looks
09:38:14 23 like a newspaper article that was printed off the
09:38:17 24 Internet.
09:38:17 25 A. That is correct.
09:38:18 26 Q. And I just have a general question. And if
09:38:21 27 you think I'm mischaracterizing something, please let me
09:38:25 28 know. But as going through your file, I didn't see a



09:38:28 1 lot of newspaper articles in there. Do you think that's
09:38:31 2 a fair characterization?
09:38:31 3 A. That is correct.
09:38:32 4 Q. Maybe only one or two.
09:38:35 5 How did you choose which newspaper articles
09:38:37 6 to put in your file in this case?
09:38:39 7 A. This was given to me by Mr. Carrick.
09:38:44 8 Q. And when did Mr. Carrick give this to you?
09:38:48 9 A. Probably at about the same time as this
09:38:52 10 meeting, but I'm not absolutely sure.
09:38:56 11 Q. And are you relying on anything in this

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09:38:58 12 newspaper article for opinions you intend to offer in
09:39:01 13 this case?
09:39:02 14 A. No.
09:39:03 15 Q. Do you intend on testifying about anything
09:39:07 16 contained in this newspaper article?
09:39:08 17 A. No.
09:39:25 18 MR. KODSI: 535I.
19 (Whereupon, Defendant's Exhibit 535I
20 was marked for identification.)
09:39:29 21 MR. KODSI: Q. Dr. Pinkerton, you've been
09:39:31 22 handed what's been marked Exhibit 535I. This looks like
09:39:37 23 some handwritten notes. Is this in your handwriting?
09:39:40 24 A. Yes.
09:39:41 25 Q. I want to compliment you that your
09:39:43 26 handwriting is substantially neater than mine. I think
09:39:47 27 I can pretty well read this, but why don't you explain
09:39:49 28 to me what you've done here.



09:39:51 1 A. These are notes that I took during the
09:39:52 2 meeting with Dr. Nazaroff and Mr. Carrick and others at
09:39:57 3 Berkeley.
09:39:59 4 Q. Others. Were there other meetings at
09:40:02 5 Berkeley that we haven't discussed?
09:40:04 6 A. No. What I mean are the other people who
09:40:08 7 were in attendance at that meeting.
09:40:10 8 Q. Dr. Murray and a couple of other attorneys?
09:40:12 9 A. Carolyn Sieves and one of Dr. --
09:40:14 10 Mr. Carrick's associates.
09:40:15 11 Q. We don't want to elevate Roger Carrick to
09:40:18 12 doctor quite yet.
09:40:19 13 Why don't you tell me what the human -- what
09:40:23 14 you mean by human's ventilation, 20 cubic meters per
09:40:27 15 day, at the top.
09:40:29 16 A. These were simply things that people were
09:40:31 17 saying, Dr. Nazaroff, Dr. Murray, in which they were
09:40:38 18 trying to better understand calculations for ventilatory
09:40:45 19 rates and delivery or dose of something that might be in
09:40:49 20 the air.
09:40:50 21 Q. And if I use the term "breathing rate"
09:40:52 22 instead of "ventilatory rate," you understand those to
09:40:54 23 be the same thing?
09:40:56 24 A. Yes.
09:40:56 25 Q. And so the 20 cubic meters per day is the
09:40:59 26 average breathing rate for a human over a 24-hour
09:41:04 27 period?
09:41:04 28 A. I'm sorry. Could you repeat that?



09:41:06 1 Q. The 20 cubic meters per day is the average
09:41:09 2 human breathing rate over a 24-hour period?
09:41:12 3 A. That's what was stated at this meeting.
09:41:16 4 Q. That's not an area that you have expertise
09:41:19 5 in?
09:41:20 6 A. I know about ventilatory rates and
09:41:24 7 approximate minute ventilations, but I've never done the
09:41:28 8 calculations to determine.
09:41:29 9 Q. What are the average ventilatory rates for
09:41:33 10 rats?
09:41:34 11 A. Approximately between 125 and 175 ml per
09:41:42 12 minute.
09:41:52 13 Q. Ml being milliliter?
09:41:55 14 A. Yes.
09:41:58 15 Q. Now, does the ventilatory rate for rats
09:42:02 16 change as they're exposed to higher levels of tobacco

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09:42:08 17 smoke?
09:42:10 18 A. I don't know the answer.
09:42:12 19 Q. That's not something that you've studied?
09:42:14 20 A. No. I would assume with -- We've never
09:42:19 21 measured it, but looking and observing animals during
09:42:22 22 our actual exposure periods, we don't see any indication
09:42:27 23 that they would be changing their ventilatory rate. But
09:42:30 24 it's never been measured in our studies.
09:42:34 25 Q. Beneath the "20 cubic meters per day," you
09:42:37 26 have a chart that shows 4 milligrams, 90 milligrams and
09:42:41 27 150 milligrams. What is that referencing?
09:42:44 28 A. These are concentrations of environmental



09:42:49 1 tobacco smoke that Dr. Witschi has used in a number of
09:42:56 2 his studies. And so that would be four milligrams per
09:43:02 3 cubic meter of particulate matter, 90 milligrams per
09:43:06 4 cubic meter, and 150 milligrams per cubic meter.
09:43:11 5 Q. Now, what did you discuss with Drs. Murray,
09:43:15 6 Nazaroff and other people at the meeting about
09:43:18 7 Dr. Witschi?
09:43:20 8 A. Whether Dr. Witschi's studies would allow for
09:43:24 9 some sort of estimate of dose or effects based on the
09:43:30 10 fact that he has used different concentrations of
09:43:34 11 environmental tobacco smoke in his studies.
09:43:36 12 Q. And what conclusion did you reach?
09:43:39 13 A. That he had used three different
09:43:42 14 concentrations of environmental tobacco smoke and, if
09:43:46 15 they thought that that would be reasonable for them to
09:43:50 16 be able to apply to a model, that they should contact
09:43:54 17 Dr. Witschi.
09:43:55 18 Q. You mentioned if they thought it was
09:43:58 19 reasonable. Do you have an opinion as to whether it
09:44:00 20 would be reasonable?
09:44:01 21 A. I think that these three different
09:44:04 22 concentrations of environmental tobacco smoke are
09:44:06 23 sufficiently different that if there is going to be a
09:44:11 24 dose response effect, that this may be reasonable
09:44:16 25 studies to look at.
09:44:18 26 Q. You understand that the three different
09:44:22 27 concentrations of environmental -- of tobacco smoke that
09:44:25 28 you have listed here were done in three different



09:44:27 1 studies; correct?
09:44:27 2 A. That is correct.
09:44:28 3 Q. And under the NTP's protocol for toxicology
09:44:32 4 studies, it is recommended that you use different dose
09:44:36 5 groups in the same study?
09:44:39 6 A. That would be the ideal.
09:44:40 7 Q. And that all of Dr. Witschi's studies only
09:44:44 8 used one dose group for tobacco smoke per study?
09:44:47 9 A. That is correct.
09:44:49 10 Q. Now, let's go to -- There's a squiggly line.
09:44:54 11 I see you squiggle like I do. And the word
09:44:58 12 "calculation," and then brackets, "times minute
09:45:02 13 ventilation times time." What is that telling us there?
09:45:06 14 A. That is an equation that either Dr. Nazaroff
09:45:08 15 or Dr. Murray pointed out to us.
09:45:12 16 Q. What is that calculation intended to show?
09:45:15 17 A. Again, I believe this would be -- what is in
09:45:19 18 the box would be the concentration that is in the air,
09:45:25 19 and then you would multiply that by minute ventilation
09:45:28 20 by time in order to get a dose per time, unit of time.
09:45:33 21 Q. And then there's a calculation beneath that

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09:45:36 22 that has "360 minutes per day times ten cubic
09:45:39 23 centimeters per minute." What is that calculation
09:45:43 24 showing us?
09:45:45 25 A. Because that calculation has the 90
09:45:48 26 milligrams per cubic meter, I'm assuming that this is an
09:45:53 27 attempt to calculate the total respirable dose of
09:46:00 28 particles that may be present or that an animal may



09:46:11 1 inhale. But at this point in time, I'm not absolutely
09:46:15 2 sure what all the other numbers mean.
09:46:17 3 Q. Let's go beneath that then. We have 10
09:46:21 4 milligrams per cigarette and some numbers there. What
09:46:24 5 is that showing us?
09:46:25 6 A. I'm not sure if the 10 milligrams is
09:46:28 7 referring to nicotine or the potential for the total
09:46:32 8 amount of particulate that might be generated per
09:46:35 9 cigarette.
09:46:39 10 Q. And the other numbers beneath that, the 3300
09:46:43 11 times ten to the minus five?
09:46:45 12 A. Those don't make any sense -- They don't have
09:46:49 13 meaning to me at this point in time.
09:46:51 14 Q. Does the phrase "scaling factor 14 for mice"
09:46:54 15 at the bottom have any meaning to you?
09:46:56 16 A. No.
09:46:57 17 Q. Okay. In the far right-hand column you have
09:47:00 18 noted "ASI, ETS as a reproductive toxicant. Talk to
09:47:08 19 Jesse Joad about rat study." I assume that's airway
09:47:12 20 hyperreactivity?
09:47:12 21 A. That's right.
09:47:13 22 Q. What are you discussing there?
09:47:15 23 A. I'm wondering if at this point there were
09:47:18 24 some discussions about who has expertise in reproductive
09:47:25 25 toxicology. And I'm assuming the asterisk means that my
09:47:33 26 thought at that time would be to talk to Dr. Joad since
09:47:36 27 she is a clinician and she might know someone in the
09:47:42 28 medical center who might be an expert in reproductive



09:47:46 1 toxicants.
09:47:47 2 Q. And I wanted to go through that, too. We
09:47:52 3 have a note on this exhibit that says "Talk to Peter
09:47:57 4 Witschi" and another note that says "Talk to Jesse
09:48:00 5 Joad." Were you involved in obtaining Dr. Witschi and
09:48:04 6 Dr. Joad as witnesses in this case?
09:48:07 7 A. No. I was asked to talk to them. I might
09:48:15 8 have been the first person they contacted, but I'm not
09:48:18 9 absolutely sure. But I think -- when I say talk to
09:48:27 10 them, probably it was talk to them with the -- with --
09:48:34 11 about them having Mr. Carrick contact them further on
09:48:40 12 these issues.
09:48:41 13 Q. When you say you were the first person to
09:48:44 14 talk to them about this case, them meaning the
09:48:48 15 plaintiff's attorneys?
09:48:48 16 A. Yes.
09:49:09 17 Q. I must have lost the clip. Oh, here.
09:49:15 18 We're on 535J.
19 (Whereupon, Defendant's Exhibit 535J
20 was marked for identification.)
09:49:42 21 MR. KODSI: Q. Dr. Pinkerton, you've been
09:49:44 22 handed Exhibit 535J. Is that a document you recognize?
09:49:47 23 A. Yes.
09:49:48 24 Q. And that's a draft report by Dr. William
09:49:52 25 Nazaroff?
09:49:53 26 A. Yes.

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09:49:56 27 Q. Who sent you this draft?
09:49:58 28 A. Mr. Carrick.

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09:50:01 1 Q. Did he ask you to comment on it at all?
09:50:09 2 A. I don't recall him asking me to specifically
09:50:13 3 comment about it. My impression was that he wanted me
09:50:19 4 to see what had been done by another member of a
09:50:24 5 university faculty with regard to Proposition 65 and
09:50:30 6 issues that were relevant to Preston Gates & Ellis.
09:50:37 7 Q. Did you form an impression of this draft when
09:50:41 8 you reviewed it?
09:50:42 9 A. Very long and very extensive in the write-up.
09:50:52 10 Q. Do you remember reading anything in this
09:50:55 11 draft that you disagreed with?
09:50:56 12 A. No.
09:51:04 13 Q. Are you relying on anything in this draft for
09:51:08 14 opinions you intend to offer in this case?
09:51:10 15 A. No.
09:51:11 16 Q. Okay. Let's mark that as our next one, as
09:51:36 17 535 -- Actually, we've been going for a little over an
09:51:40 18 hour. Why don't we -- this is a good time to stop.
09:51:44 19 VIDEO OPERATOR: Going off the record, the
09:51:46 20 time is 9:51.
21 (Recess taken from 9:51 to 10:04 a.m.)
10:04:47 22 VIDEO OPERATOR: Back on the record. The
10:04:49 23 time is 10:04.
24 (Whereupon, Defendant's Exhibit 535K
25 was marked for identification.)
10:05:11 26 MR. KODSI: Q. Dr. Pinkerton, you've been
10:05:14 27 handed what's been marked as Exhibit 535K. And it looks
10:05:18 28 to be a letter from a Dr. James Crapo to Max Eisenberg?

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10:05:24 1 A. Yes.
10:05:25 2 Q. Is that a document that you're familiar with?
10:05:27 3 A. Yes.
10:05:28 4 Q. How did you obtain this document?
10:05:31 5 A. From Mr. Carrick.
10:05:33 6 Q. Are you relying on this document for any
10:05:36 7 opinions you intend to offer in this case?
10:05:39 8 A. No.
10:05:40 9 Q. Do you intend on offering any testimony about
10:05:42 10 this document?
10:05:43 11 A. No.
12 (Whereupon, Defendant's Exhibit 535L
13 was marked for identification.)
10:05:56 14 MR. KODSI: Q. Dr. Pinkerton, Exhibit 535L
10:06:00 15 looks like an e-mail from you to Carolyn Sieve at
10:06:04 16 Preston Gates; correct?
10:06:05 17 A. Yes.
10:06:06 18 Q. And you sent this e-mail to her on September
10:06:11 19 12th, 1999?
10:06:13 20 A. Yes.
10:06:14 21 Q. What was the purpose of this e-mail?
10:06:18 22 A. It was just prior to my going to the U.S.
10:06:22 23 E.P.A. workshop on children's health in Richmond,
10:06:26 24 Virginia. And I believe I had sent my declaration but
10:06:33 25 had felt that it was not really there. And so I wrote
10:06:38 26 this just to summarize my feelings about health effects
10:06:43 27 of ETS and children's health as designed in animal
10:06:49 28 studies.

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10:06:50 1 Q. You mentioned you sent her your declaration.
10:06:55 2 Did you make edits to the version that you sent her in

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10:06:58 3 September of 1999?
10:07:01 4 A. After I had sent it to her?
10:07:04 5 Q. Yes.
10:07:05 6 A. I don't remember.
10:07:09 7 Q. In your file, I don't remember seeing any
10:07:13 8 early drafts of your declaration. Do you have early
10:07:16 9 drafts of your declaration in your possession?
10:07:21 10 A. Probably on my computer. If I don't have it,
10:07:28 11 it wasn't in any of these documents.
10:07:30 12 Q. We'll go through those, and maybe I'm missing
10:07:34 13 something. It might be, but I don't remember seeing
10:07:36 14 any.
10:07:36 15 A. Uh-huh.
10:07:37 16 Q. Did you save your drafts on your computer?
10:07:41 17 A. At least my final draft.
10:07:44 18 Q. Do you remember if you've saved earlier
10:07:46 19 drafts on your computer?
10:07:48 20 A. Probably not.
10:07:52 21 Q. In this e-mail to Ms. Sieve, you make a few
10:07:57 22 points I wanted to ask you about. In Point No. 2,
10:08:03 23 almost -- the second sentence from the end you indicate,
10:08:08 24 "It has been established that people smoking can
10:08:12 25 generate a cloud of smoke around them that commonly
10:08:16 26 reach 2 milligrams per cubic meter of TSP."
10:08:19 27 A. Yes.
10:08:20 28 Q. What's your basis for that opinion?



10:08:21 1 A. That there have actually been studies that
10:08:24 2 have shown if you're not just doing field measurements
10:08:30 3 that are averaged over a time, that there can actually
10:08:34 4 reach peak concentrations that have been measured at 2
10:08:38 5 milligrams per cubic meter of particulate matter.
10:08:42 6 Q. Are you familiar with which studies those
10:08:44 7 would be?
10:08:45 8 A. I don't remember the specific study.
10:08:50 9 Q. Are those studies that looked at measurements
10:08:53 10 of sidestream smoke or ETS?
10:08:55 11 A. Of ETS.
10:08:57 12 Q. In chamber environments or field
10:09:02 13 environments?
10:09:02 14 A. In field environments.
10:09:04 15 Q. And right now you can't remember any of the
10:09:07 16 authors or researchers involved in those?
10:09:09 17 A. No.
10:09:10 18 Q. Do you remember if those were studies
10:09:12 19 conducted with CIAR funding or not?
10:09:15 20 A. No.
10:09:15 21 Q. No, you don't remember, or no, they weren't?
10:09:18 22 A. No, I don't know.
10:09:21 23 Q. In Point No. 3 you begin by indicating "We
10:09:26 24 have no proof that ETS exposures of short duration are
10:09:31 25 potentially less harmful than prolonged exposures."
10:09:34 26 A. Yes.
10:09:37 27 Q. Does that mean that ETS exposures of short
10:09:42 28 duration may be less harmful than prolonged exposures?



10:09:47 1 A. The point of this statement was simply to
10:09:52 2 express to Ms. Sieve that we don't know if you have to
10:09:59 3 have long-term exposures to have health effects, that
10:10:03 4 short-term exposures may have just as equal of an effect
10:10:11 5 as long-term exposures.
10:10:13 6 Q. But right now, based on your level of
10:10:16 7 scientific knowledge, short-term exposures may or may

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10:10:19 8 not have the same effect as long-term exposures?
10:10:23 9 A. In this particular statement under No. 3, I
10:10:27 10 gave an example of why I made that statement. We
10:10:31 11 conducted a study in which we looked at exposures to ETS
10:10:36 12 for as short as four days which led to the same level of
10:10:40 13 bioactivation for metabolic function as 50 continuous
10:10:45 14 days of exposure.
10:10:46 15 Q. What is bioactivation of metabolic function?
10:10:50 16 A. This is an up regulation and an increased
10:10:54 17 level of the isozymes present in the lungs for
10:10:59 18 metabolizing constituents found in tobacco smoke.
10:11:02 19 Q. And it's possible to have bioactivation of
10:11:05 20 metabolic function without leading to any adverse health
10:11:10 21 effects?
10:11:10 22 A. That is correct.
10:11:13 23 Q. In Point No. 4, you talk about exposing
10:11:20 24 animals to ETS levels as low as .3 milligrams per cubic
10:11:40 25 meter and as low as .1 milligrams per cubic meter?
10:11:44 26 A. Yes.
27 Q. Is that the study you talked about --
28 (Reporter interrupted)



10:11:52 1 MR. KODSI: Q. And then my next question is
10:11:54 2 are you discussing in Point No. 4 on Exhibit 535L the
10:11:59 3 same unpublished CIAR data we talked about yesterday?
10:12:04 4 A. Yes.
10:12:05 5 Q. All right. No reason to revisit all that.
10:12:15 6 Let's go on to -- We're done with that one.
10:12:36 7 That's one we don't want to have marked. I take that
10:12:41 8 back, I'm sorry.
10:12:44 9 Can we go off the record for one second.
10:12:48 10 VIDEO OPERATOR: Off the record, the time is
10:12:50 11 10:12.
12 (Discussion off the record)
10:13:40 13 VIDEO OPERATOR: Back on the record. 10:13.
14 (Whereupon, Defendant's Exhibit 535M
15 was marked for identification.)
10:13:48 16 MR. KODSI: Q. Dr. Pinkerton, you've been
10:13:49 17 handed what's been marked as Exhibit 535M. Could you
10:13:55 18 explain for us what that is?
10:13:57 19 A. These are some handwritten notes that I've
10:14:02 20 made just to kind of crystallize my ideas about
10:14:10 21 environmental tobacco smoke and perinatal lung
10:14:13 22 development in rodents.
10:14:19 23 Q. When did you make these notes?
10:14:21 24 A. Probably, now that I look at this, in the
10:14:26 25 same time frame as I wrote the e-mail message that we
10:14:30 26 looked at previously to Carolyn Sieve.
10:14:37 27 Q. And under Point No. 1 you mentioned ETS and
10:14:46 28 ADSS with a little arrow that says "similarities and



10:14:50 1 differences" and then lists some points there. What are
10:14:54 2 you discussing in that point?
10:14:56 3 A. The fact that aged and diluted sidestream
10:15:00 4 smoke is our best surrogate for reproducing
10:15:03 5 environmental tobacco smoke and -- but that we -- we
10:15:09 6 have many similarities, but there are also some
10:15:14 7 differences such as not having exhaled mainstream
10:15:17 8 cigarette smoke as part of ADSS.
10:15:20 9 Q. Are there other differences between ADSS and
10:15:25 10 ETS?
10:15:26 11 A. Other than the absence of exhaled mainstream
10:15:31 12 smoke, no.

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10:15:34 13 Q. As you produce higher concentrations of ADSS,
10:15:40 14 do you develop any differences between ADSS and ETS?
10:15:44 15 A. I'm not aware of any differences. If you
10:15:49 16 produce high concentrations, they should be the same.
10:15:56 17 The only potential difference might be in particle size
10:16:01 18 distribution.
10:16:02 19 Q. What about in composition? Have you studied
10:16:05 20 whether or not higher concentrations of ADSS have
10:16:10 21 different composition from lower concentrations of ADSS?
10:16:16 22 A. Based on the three primary constituents that
10:16:20 23 we measure in ADSS, which are total suspended
10:16:25 24 particulate, nicotine and carbon monoxide, we typically
10:16:30 25 see a fairly linear relationship between carbon monoxide
10:16:35 26 and TSP levels. So I don't think that may answer the
10:16:48 27 question, but it does at least say that there are
10:16:51 28 some -- there is some linearity in two very different



10:16:55 1 constituents of environmental tobacco smoke that seem to
10:16:58 2 increase in the same parallel manner as you increase the
10:17:03 3 total concentration of the smoke.
10:17:04 4 Q. As we discussed yesterday, based on your work
10:17:07 5 with Drs. Teague and Jenkins and others, the
10:17:10 6 relationship you found between nicotine and particles as
10:17:15 7 you increase ADSS is not linear?
10:17:21 8 A. I'm not sure that we concluded that. What we
10:17:28 9 did find was that nicotine seemed to be influenced by
10:17:31 10 surface area of -- in which the smoke was introduced
10:17:36 11 into, and also the temperature relative humidity seemed
10:17:41 12 to also influence the amount of nicotine that we would
10:17:45 13 be able to measure in our air samples taken from the
10:17:49 14 exposure chamber.
10:17:50 15 Q. And what you found at lower levels of ADSS,
10:17:56 16 the nicotine to particulate ratio was approximately --
10:18:01 17 or let's do it backwards. At lower levels of ADSS, the
10:18:06 18 particulate to nicotine ratio was approximately ten to
10:18:11 19 one?
10:18:13 20 A. Again, I would have to look to see.
10:18:16 21 Q. Let's take a look at that real quickly. I
10:18:19 22 think we did mark that yesterday. Is this it?
10:18:22 23 A. Yes.
10:18:23 24 Q. Exhibit 533, which is the Teague paper we've
10:18:26 25 been talking about -- I think you're going to find it's
10:18:34 26 on page 91, the point we're talking about here. At the
10:18:38 27 bottom of that page I believe you talk about measures
10:18:41 28 for particles, and then on the next page you talk about



10:18:45 1 levels for nicotine. I may have that backwards.
10:18:48 2 A. In the text or in the figures?
10:18:52 3 Q. In the text.
10:18:53 4 A. Okay.
10:18:57 5 Q. And I think what you found in that study was
10:19:02 6 that at the lower particulate level, the
10:19:07 7 particle-nicotine ratio was approximately ten to one; is
10:19:11 8 that correct?
10:19:37 9 A. Actually, that seems to be correct. In
10:19:41 10 looking at this, for example, a TSP concentration of
10:19:46 11 1,000 micrograms per cubic meter correlates with 400
10:19:52 12 micrograms per cubic meter of nicotine. So that doesn't
10:19:56 13 seem to be a ten to one ratio. It seems to be -- is
10:20:01 14 that --
10:20:02 15 Q. Do you have here -- let me take a quick look.
10:20:15 16 I was looking at -- it looks like in a TSP
10:20:25 17 concentration of 100 micrograms per cubic meter you have

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10:20:28 18 a nicotine concentration of ten micrograms per cubic
10:20:31 19 meter.
10:20:31 20 A. Uh-huh.
10:20:34 21 Q. So at the lowest TSP concentration you looked
10:20:39 22 at, which would be 100 micrograms per cubic meter, the
10:20:43 23 ratio was ten to one for nicotine and particles?
10:20:46 24 A. Yes.
10:20:47 25 Q. And at the highest concentration you looked
10:20:50 26 at, the ratio was closer to four to one?
10:20:53 27 A. Yes.
10:20:57 28 Q. And that is an example of how the aged and



10:21:01 1 diluted sidestream smoke in your chambers may differ in
10:21:05 2 composition from real world environmental tobacco smoke?
10:21:07 3 A. Actually, a ratio of four to one for nicotine
10:21:12 4 to particulate is actually truer to real world
10:21:19 5 concentrations -- or the ratio between particulate and
10:21:22 6 nicotine.
10:21:26 7 One of the things that we have looked at is
10:21:30 8 to try to create as close to real world concentrations
10:21:36 9 as possible. And as I mentioned, one of our limitations
10:21:40 10 might be having a little too much nicotine relative to
10:21:44 11 particulates. But again, there is a ratio that I
10:21:50 12 believe is four to one or three to one for that that one
10:21:55 13 would expect. So based on that, the range in which
10:22:00 14 we're working at may not be too far off from real world
10:22:05 15 concentrations of the particulate and nicotine.
10:22:07 16 Q. It's your opinion that in real world
10:22:11 17 environments, the nicotine ratio is closer to four to
10:22:14 18 one than it is ten to one?
10:22:15 19 A. That's my understanding.
10:22:16 20 Q. Are you familiar with the work of a Dr. Jim
10:22:19 21 Repace?
10:22:21 22 A. No.
10:22:22 23 Q. That's not a name you're familiar with?
10:22:24 24 A. I've heard the name, but I'm more -- but I'm
10:22:28 25 not familiar with his work.
10:22:33 26 Q. When we were talking about the composition of
10:22:36 27 ADSS and the composition of ETS, the only constituents
10:22:42 28 that you have done that test for are the three that we



10:22:46 1 just talked about: nicotine, carbon monoxide and
10:22:49 2 particles?
10:22:49 3 A. Yes. That's on a routine basis.
10:22:57 4 Q. I didn't have any other questions on that
10:23:00 5 exhibit.
10:23:15 6 We are now on 535N.
7 (Whereupon, Defendant's Exhibit 535N
8 was marked for identification.)
10:23:26 9 MR. KODSI: Q. Dr. Pinkerton, I've handed
10:23:28 10 you what's been marked as Exhibit 535N. Is this the
10:23:35 11 draft or -- why don't you tell me what this is. That's
10:23:40 12 easier.
10:23:41 13 A. This is the draft of Dr. Joad for her
10:23:43 14 declaration that she prepared for Preston Gates & Ellis.
10:23:48 15 Q. We talked about this yesterday. She sent you
10:23:51 16 this draft prior to finalizing it, and you indicated
10:23:56 17 that you did not provide her any comments back on it?
10:23:59 18 A. Yes.
10:24:01 19 Q. Is there anything that you're relying on this
10:24:05 20 draft for in the opinions you intend to offer in this
10:24:07 21 case?
10:24:08 22 A. Only in the respect that this covers more

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10:24:10 23 extensively the health effects based on epidemiological
10:24:16 24 studies and human clinical studies.
10:24:22 25 Q. There's nothing that you're relying on this
10:24:25 26 draft for that you're not relying on her declaration,
10:24:29 27 her final declaration for?
10:24:30 28 MR. BROOKEY: Objection. Asked and answered.



10:24:32 1 THE WITNESS: Could you repeat the question?
10:24:33 2 MR. KODSI: Q. There is nothing that you're
10:24:35 3 relying on this draft for that you're not also relying
10:24:39 4 on her final declaration for?
10:24:40 5 A. That's correct.
10:24:41 6 Q. That's fine. I'm done with that.
10:25:18 7 535O.
8 (Whereupon, Defendant's Exhibit 535O
9 was marked for identification.)
10:25:28 10 MR. KODSI: Q. Dr. Pinkerton, you've been
10:25:31 11 handed what's been marked as Exhibit 535O. Could you
10:25:35 12 describe what that is for us?
10:25:44 13 A. This is a handwritten list of items that I
10:25:54 14 must have been thinking of sometime having to deal with
10:26:02 15 some of our cigarette smoke research.
10:26:09 16 Q. What is -- up top it indicates "Mang's
10:26:15 17 presentation - ATS." What is that referring to?
10:26:18 18 A. Mang is a graduate student at the University
10:26:21 19 of California, Davis, in immunology. And this is his
10:26:31 20 presentation on the effects of preexposure to
10:26:35 21 environmental tobacco smoke on heightened sensitivity to
10:26:39 22 the effects of exposure to ozone.
10:26:43 23 Q. And what is the Royce study that you're
10:26:47 24 referring to, No. 2?
10:26:49 25 A. This is an ongoing study. Dr. Royce is a
10:26:54 26 pediatric pulmonologist who has since left the
10:27:00 27 university to pursue private practice. But this was
10:27:05 28 just a cryptic description of an experiment which we



10:27:10 1 were collaborating with him to examine the effects of
10:27:14 2 pre- and postnatal exposure to cigarette smoke followed
10:27:19 3 by a single exposure to ozone.
10:27:23 4 Q. And is the intent of that study to expose
10:27:28 5 animals to cigarette smoke at a concentration of 30
10:27:31 6 milligrams per cubic meter?
10:27:34 7 A. This -- for the -- during the pregnancy.
10:27:39 8 This was only during the pregnancy.
10:27:41 9 Q. Do you equate a concentration of 30
10:27:44 10 milligrams per cubic meter with ETS exposure or active
10:27:48 11 smoking?
10:27:50 12 A. This would be our surrogate for -- certainly
10:27:59 13 not environmental tobacco smoke, but a surrogate for
10:28:03 14 active smoking.
10:28:04 15 Q. So a concentration of 30 milligrams per cubic
10:28:08 16 meter in your opinion would be too high for a study of
10:28:12 17 environmental tobacco smoke?
10:28:13 18 A. If we were trying to relate it to
10:28:16 19 environmentally relevant exposure conditions.
10:28:22 20 Q. And I guess Point No. 3 there is talking
10:28:31 21 about the study we discussed yesterday on ozone and
10:28:34 22 nitrogen dioxide?
10:28:36 23 A. Yes.
10:28:37 24 Q. And Point No. 4 is discussing the dose
10:28:40 25 response issue we talked about previously in your
10:28:45 26 meeting with Bill Nazaroff and Mr. Murray -- Dr. Murray,
10:28:48 27 Mr. Carrick and others?

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10:28:50 28 A. Yes.



10:28:51 1 Q. What's Point No. 5? Is that primate control
10:28:56 2 smoke chambers?
10:28:56 3 A. Primate center smoke chambers.
10:28:59 4 Q. What are the primate center smoke chambers?
10:29:02 5 A. We've established an inhalation system at the
10:29:05 6 California Regional Primate Research Center Inhalation
10:29:09 7 Facility to do studies in nonhuman primates on
10:29:14 8 environmental tobacco smoke.
10:29:15 9 Q. And those are the studies, I think, we talked
10:29:19 10 about earlier, too, that are under way now?
10:29:23 11 A. Yes.
10:29:24 12 Q. And the chronic ozone paper - Toxicological
10:29:27 13 Sciences, what's that referring to?
10:29:36 14 A. Probably a paper that was in press with
10:29:43 15 Dr. Witschi.
10:29:44 16 Q. And this is another one of your papers
10:29:48 17 studying the effects of ozone on animals?
10:29:50 18 A. Yes.
10:30:11 19 MR. KODSI: Let's mark that as 535P.
20 (Whereupon, Defendant's Exhibit 535P
21 was marked for identification.)
10:30:14 22 MR. KODSI: Q. You've been handed Exhibit
10:30:19 23 535P, Dr. Pinkerton. Is that an e-mail from you to
10:30:23 24 Roger Carrick?
10:30:24 25 A. Yes.
10:30:25 26 Q. That was sent in April of 1999?
10:30:28 27 A. Yes.
10:30:29 28 Q. And looking at this e-mail, did you set up



10:30:32 1 the initial meetings with Dr. Witschi and Roger Carrick
10:30:35 2 for this case?
10:30:37 3 A. No.
10:30:42 4 Q. Were you the first person to approach
10:30:44 5 Dr. Witschi about playing a role in this case?
10:30:46 6 A. No.
10:30:53 7 Q. Why don't you describe, I guess, then what
10:30:56 8 you're discussing with Mr. Carrick in this e-mail?
10:30:59 9 A. This is a follow-up for our meeting on April
10:31:02 10 19th in which I promised to speak with Dr. Witschi and
10:31:06 11 Dr. Joad about those issues that were on my notes. And
10:31:12 12 apparently, I had spoken with Dr. Witschi, and he was
10:31:19 13 willing to speak with Mr. Carrick about his studies in
10:31:24 14 mice and carcinogenesis and cigarette smoke and that
10:31:30 15 this would be the e-mail address if he wished to contact
10:31:36 16 him by e-mail.
10:31:37 17 Q. You were asking Mr. Carrick that if he was
10:31:41 18 interested, he should contact Dr. Witschi directly?
10:31:43 19 A. If he wanted to do it by e-mail, uh-huh.
10:31:47 20 Q. Prior to your discussions with Dr. Witschi
10:31:50 21 that you reference in this e-mail, he had not spoken
10:31:54 22 with Mr. Carrick before?
10:31:56 23 A. I don't think so.
10:31:56 24 Q. And the same for Dr. Joad. You indicate you
10:32:00 25 hadn't had an opportunity to speak with her yet. Did
10:32:04 26 Mr. Carrick ask you to contact Jesse Joad on his behalf?
10:32:08 27 A. Yes.
10:32:09 28 Q. And prior to contacting her, she had not been



10:32:13 1 involved in this case?
10:32:14 2 A. No.
10:32:15 3 Q. Did you have discussions with Dr. Witschi or

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10:32:18 4 Dr. Joad about whether or not they would be interested
10:32:23 5 in working on this case?
10:32:34 6 A. Yes.
10:32:35 7 Q. And that was prior to them agreeing to
10:32:39 8 participate in the case?
10:32:41 9 A. It was prior to them actually having
10:32:44 10 Mr. Carrick contact them.
10:32:46 11 Q. Did you encourage them to participate in this
10:32:50 12 case?
10:32:50 13 A. No.
10:33:02 14 Q. That's a duplicate.
10:33:31 15 MR. KODSI: This is 535Q.
16 (Whereupon, Defendant's Exhibit 535Q
17 was marked for identification.)
10:33:40 18 MR. KODSI: Q. Dr. Pinkerton, you've been
10:33:42 19 handed what's been marked as 535Q. This is a fax that
10:33:47 20 was sent to you on February 25th, 1999 by Roger
10:33:50 21 Carrick; correct?
10:33:51 22 A. Yes.
10:33:53 23 Q. And attached to the fax is a two-page
10:33:57 24 Internet article titled "Passive smoking tied to breast
10:34:01 25 cancer risk"; correct?
10:34:02 26 A. Yes.
10:34:03 27 Q. Do you intend on relying on that article for
10:34:05 28 any opinions --



10:34:06 1 A. No.
10:34:07 2 Q. -- that you plan to offer in this case?
10:34:09 3 A. No.
10:34:11 4 Q. And I assume you don't intend on testifying
10:34:14 5 about that article at all in this case?
10:34:16 6 A. No.
10:34:58 7 MR. KODSI: Let's mark 535R.
8 (Whereupon, Defendant's Exhibit 535R
9 was marked for identification.)
10:35:04 10 MR. KODSI: Q. I think we talked yesterday
10:35:06 11 about the fact that you reviewed the deposition of
10:35:12 12 Dr. Slotkin prior to being deposed in this case.
10:35:19 13 A. Yes.
10:35:19 14 Q. This is just the transmittal letter from Jack
10:35:24 15 Schatz, who is a paralegal at Preston Gates & Ellis
10:35:27 16 sending you the Slotkin transcript?
10:35:29 17 A. Yes.
10:35:31 18 Q. I don't think we need to probe that any
10:35:34 19 further.
10:36:02 20 Let's mark that as 535S.
21 (Whereupon, Defendant's Exhibit 535S
22 was marked for identification.)
10:36:09 23 MR. KODSI: Q. You've been handed what's
10:36:12 24 been marked as 535S, Dr. Pinkerton. This is a November
10:36:17 25 1999 letter from you to Roger Carrick that just
10:36:20 26 discusses the meeting that you had with he and
10:36:25 27 Dr. Nazaroff?
10:36:25 28 A. Actually, this letter was my attempt to bill



10:36:30 1 my hours.
10:36:31 2 Q. Okay. But this is a letter that you wrote?
10:36:37 3 A. Yes.
10:37:03 4 MR. KODSI: 535T.
5 (Whereupon, Defendant's Exhibit 535T
6 was marked for identification.)
10:37:50 7 MR. KODSI: Q. You've been handed Exhibit
10:37:52 8 535T. Do you recognize that, Dr. Pinkerton?

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10:37:55 9 A. Yes.
10:37:56 10 Q. And I noticed that that's a cover letter for
10:38:02 11 Carolyn Sieve to you on May 13th, 1999, attaching your
10:38:08 12 consulting agreement with the Preston Gates firm in this
10:38:11 13 case?
10:38:11 14 A. Yes.
10:38:17 15 Q. I noticed that in the letter to you,
10:38:21 16 Ms. Sieve refers to you as a professor in training. Is
10:38:24 17 that an accurate title for you?
10:38:26 18 A. No.
10:38:28 19 Q. What is your title at California-Davis?
10:38:32 20 A. Professor in residence.
10:38:34 21 Q. What is a professor in residence?
10:38:38 22 A. This is an academic appointment that is --
10:38:45 23 I'm a member of the academic senate for the University
10:38:48 24 of California, and I have all the rights of a full
10:38:55 25 professor. I just don't have security based on a
10:39:06 26 state tenure track.
10:39:08 27 Q. And the agreement for consulting services
10:39:17 28 that is attached to the cover letter of 535T, that is



10:39:23 1 the final agreement that you signed with Preston Gates &
10:39:25 2 Ellis in this case?
10:39:29 3 A. Yes.
10:39:35 4 Q. Who prepared that agreement?
10:39:41 5 A. Preston Gates & Ellis.
10:39:59 6 Q. I think this might be a duplicate, but let me
10:40:03 7 mark this anyway. It's 535U -- sorry. I just realized
10:40:13 8 that's mine. That may be why it's a duplicate. Let's
10:40:17 9 put that there.
10:40:20 10 That's the one to mark in his file.
11 (Whereupon, Defendant's Exhibit 535U
12 was marked for identification.)
10:40:37 13 MR. KODSI: Q. I think -- Let me ask you
10:40:41 14 this: You've been handed Exhibit 535U, and that's a fax
10:40:46 15 cover sheet from Roger Carrick to you dated June 4th,
10:40:50 16 1999; correct?
10:40:51 17 A. Yes.
10:40:51 18 Q. And attached to that fax he sends you a copy
10:40:55 19 of Dr. Slotkin's report; correct?
10:40:57 20 A. Yes.
10:40:57 21 Q. Earlier, we talked about the fact that you
10:41:00 22 were sent a copy of Dr. Slotkin's report as an exemplar
10:41:04 23 for you to see how these reports are prepared; correct?
10:41:07 24 A. Yes.
10:41:08 25 Q. I noticed on this fax cover that -- I almost
10:41:11 26 said Dr. Carrick -- Mr. Carrick is asking you to review
10:41:14 27 Dr. Slotkin's report and call him as soon as you have a
10:41:18 28 chance. Do you remember having a discussion with him



10:41:20 1 about the content of this report?
10:41:22 2 A. No.
10:41:48 3 MR. KODSI: 535V.
4 (Whereupon, Defendant's Exhibit 535V
5 was marked for identification.)
10:41:53 6 MR. KODSI: Q. 535V is another news article
10:41:58 7 that was printed off the Internet, Dr. Pinkerton. Do
10:41:58 8 you recognize this?
10:41:59 9 A. Yes.
10:42:00 10 Q. Are you relying on this article for any
10:42:03 11 opinions you intend to offer in this case?
10:42:06 12 A. No.
10:42:06 13 Q. Are you relying on the study referenced in

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10:42:09 14 this article for any opinions you intend to offer in
10:42:12 15 this case?
10:42:12 16 A. No.
10:42:13 17 Q. You are not going to testify about the
10:42:15 18 article itself?
10:42:16 19 A. No.
10:42:16 20 Q. And was this article sent to you by
10:42:20 21 Mr. Carrick?
10:42:23 22 A. This might have been given to me by an
10:42:26 23 obstetrician and gynecologist at the medical center.
10:42:31 24 Q. Was it something you requested or just
10:42:34 25 something they gave you?
10:42:35 26 A. Something they gave me.
10:42:37 27 Q. All right. That's all I have on that one.
28 (Whereupon, Defendant's Exhibit 535W



1 was marked for identification.)
10:42:53 2 MR. KODSI: Q. You've been handed Exhibit
10:42:55 3 535W, Dr. Pinkerton. This looks like some handwritten
10:42:59 4 notes. Is this your handwriting?
10:43:00 5 A. Yes.
10:43:01 6 Q. What are you discussing on this page?
10:43:04 7 A. This is actually a research technique that we
10:43:08 8 use of being able to use a special type of microscope to
10:43:16 9 visualize three-dimensionally images by fluorescence,
10:43:25 10 confocal scanning fluorescence.
10:43:36 11 Q. I don't have anything else on that one.
12 (Discussion off the record)
13 (Whereupon, Defendant's Exhibit 535X
14 was marked for identification.)
10:44:08 15 MR. KODSI: Q. You've been handed what's
10:44:10 16 been marked as Exhibit 535X. Is this a document that
10:44:14 17 you're relying on for any opinions that you're going to
10:44:17 18 offer in this case?
10:44:19 19 A. No.
10:44:19 20 Q. And do you plan on offering any testimony
10:44:22 21 about this document?
10:44:23 22 A. No.
10:44:23 23 Q. That's all I have on that.
10:44:30 24 Why was this document in your file?
10:44:32 25 A. Because it was sent to my wife.
10:44:37 26 Q. You just thought it was relevant to put in
10:44:40 27 your file on a case that was related to tobacco smoke?
10:44:43 28 A. I was just amused.



10:44:49 1 You're getting my complete file.
10:44:51 2 Q. Understood. That's why some of these
10:44:53 3 questions are very short. If you're not relying on it,
10:44:56 4 we don't need to.
10:44:57 5 Let's lump all that together as Y. We'll
6 clip those together as one exhibit.
7 (Whereupon, Defendant's Exhibit 535Y
8 was marked for identification.)
10:46:17 9 MR. KODSI: Q. Dr. Pinkerton, I've handed
10:46:19 10 you a series of documents I've grouped together that
10:46:22 11 were order in your file as Exhibit 535Y. I'd just ask
10:46:27 12 you to thumb through those and let me know if you
10:46:29 13 recognize those.
10:46:50 14 A. Yes, I do.
10:46:52 15 Q. I have put that all together as one exhibit
10:46:55 16 because -- and I want you to let me know if I'm saying
10:46:59 17 this right. This seems to -- Exhibit 535Y seems to
10:47:03 18 contain correspondence and drafts regarding your

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10:47:06 19 consulting agreement with Preston Gates & Ellis?
10:47:09 20 A. That is correct.
10:47:09 21 Q. Those all relate together; that's why they're
10:47:12 22 marked as one exhibit.
10:47:14 23 A. Yes.
10:47:14 24 Q. And you're comfortable with that
10:47:16 25 marking; correct?
10:47:17 26 A. Yes.
10:47:18 27 Q. The only real -- there seems to be a lot of
10:47:20 28 correspondence back and forth. I just want to ask you



10:47:24 1 on the first page of Exhibit 535Y what concerns you had
10:47:27 2 against inadvertent slip-ups, what that meant?
10:47:30 3 A. Since this was my first time as being an
10:47:35 4 expert witness preparing a declaration, I really didn't
10:47:39 5 have any ideas about what was going on. And one of my
10:47:46 6 concerns was that there is this confidentiality clause
10:47:49 7 and that I should not be discussing this, and my
10:47:54 8 concern -- because this is my research, that was my
10:47:58 9 concern that the agreement makes sure that I don't
10:48:04 10 create problems for myself if I were to say something
10:48:09 11 inadvertently.
10:48:10 12 Q. Okay. That's all I have on that document.
10:48:13 13 Let's mark this as 535Z. We made it to the
10:48:29 14 end of the alphabet.
15 (Whereupon, Defendant's Exhibit 535Z
16 was marked for identification.)
10:48:42 17 MR. KODSI: Q. 535Z is just a series of
10:48:46 18 e-mails between you and Roger Carrick talking about
10:48:50 19 getting Drs. Witschi and Joad involved in this
10:48:53 20 case; correct?
10:48:54 21 A. Yes.
10:48:55 22 Q. That's all I have on those.
10:49:23 23 We made it to double A.
24 (Whereupon, Defendant's Exhibit 535AA
25 was marked for identification.)
10:49:27 26 MR. KODSI: Q. I've handed you what's been
10:49:30 27 marked as Exhibit 535AA and ask if you recognize that.
10:49:44 28 A. Yes.



10:49:49 1 Q. Now, this describes -- The first page is an
10:49:57 2 e-mail message from Jack Schatz at Preston Gates & Ellis
10:50:02 3 to you regarding your declaration.
10:50:04 4 A. Yes.
10:50:04 5 Q. And who is Mr. Schatz, if you know?
10:50:08 6 A. I have never met him.
10:50:10 7 Q. Is it your understanding he's a legal
10:50:13 8 assistant at the firm of Preston Gates & Ellis?
10:50:15 9 A. Yes.
10:50:16 10 Q. He indicates to you that he's assisting
10:50:19 11 Carolyn Sieve with the drafting of your declaration.
10:50:23 12 What role did Jack Schatz and Carolyn Sieve play in the
10:50:26 13 drafting of your declaration?
10:50:32 14 A. My understanding was putting it on the forms
10:50:36 15 that are required for a declaration. Also, I don't know
10:50:40 16 what role Mr. Schatz played, but I assume that Carolyn
10:50:44 17 Sieve helped to prepare the introductory comments
10:50:48 18 describing my background.
10:50:51 19 Q. Was there anything else that they did to help
10:50:55 20 you edit the declaration?
10:50:59 21 A. No.
10:51:29 22 MR. KODSI: 535BB.
23 (Whereupon, Defendant's Exhibit 535BB

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24 was marked for identification.)
10:51:38 25 MR. KODSI: Q. Dr. Pinkerton, you've been
10:51:41 26 handed what's been marked as 535BB. Do you recognize
10:51:45 27 that letter?
10:51:46 28 A. Yes.



10:51:47 1 Q. And what's your understanding of this letter?
10:51:55 2 A. We had received a subpoena requiring us to
10:52:02 3 appear at a deposition in December of last year, and
10:52:09 4 this was simply a follow-up to let us know that we would
10:52:16 5 not be serving those depositions at this time.
10:52:32 6 Q. I don't have any more questions on that.
10:52:47 7 Let's mark that as 535CC.
8 (Whereupon, Defendant's Exhibit 535CC
9 was marked for identification.)
10:53:14 10 MR. KODSI: Q. You've been handed Exhibit
10:53:16 11 535CC. That looks like an earlier draft of your
10:53:21 12 declaration in this case?
10:53:22 13 A. Yes.
10:53:23 14 Q. There's some handwritten notes and circles on
10:53:26 15 that draft. Are those your handwriting?
10:53:29 16 A. Yes.
10:53:29 17 Q. Those are the only questions I have on that.
10:53:54 18 Let's do that as 535DD.
19 (Whereupon, Defendant's Exhibit 535DD
20 was marked for identification.)
10:54:07 21 MR. KODSI: Q. Dr. Pinkerton, you've been
10:54:09 22 handed Exhibit 535DD. That is a fax that you sent to
10:54:15 23 John "Mickey" McGuire?
10:54:18 24 A. Yes.
10:54:19 25 Q. And in that fax, you referenced two articles.
10:54:24 26 Are these articles that you're relying on for your
10:54:28 27 opinions in this case?
10:54:31 28 A. Yes.



10:54:35 1 Q. And are these articles that you address in
10:54:38 2 your declaration?
10:54:39 3 A. No.
10:54:40 4 Q. That's because the articles came out after
10:54:44 5 your declaration?
10:54:44 6 A. That's right.
10:54:50 7 Q. We'll probe those a little later today.
10:54:53 8 That's all I have on that.
10:55:17 9 MR. KODSI: We only have a minute on the
10:55:20 10 tape, so why don't we take a short break.
10:55:24 11 VIDEO OPERATOR: This marks the end of tape
10:55:27 12 No. 4 in the Deposition of Kent Pinkerton. Going off
10:55:30 13 the record, the time is 10:55.
14 (Recess taken from 10:55 to 10:57 a.m.)
10:57:41 15 VIDEO OPERATOR: Back on the record. Here
10:57:45 16 marks the beginning of Tape No. 5 in the deposition of
10:57:48 17 Kent Pinkerton. The time is 10:57.
10:57:51 18 MR. KODSI: Okay. 535EE. We're going to
10:57:55 19 make it to GG and stop, I think.
20 (Whereupon, Defendant's Exhibit 535EE
21 was marked for identification.)
10:58:13 22 MR. KODSI: Q. Dr. Pinkerton, you've been
10:58:15 23 handed Exhibit 535EE. Do you recognize that document?
10:58:21 24 A. Yes.
10:58:22 25 Q. Is that your final report that you provided
10:58:25 26 to Preston Gates & Ellis for this case?
10:58:28 27 A. I think so.
10:58:38 28 Q. And that's all I need to know for that one.

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10:58:43 1 We're done with that.
10:58:44 2 FF.
3 (Whereupon, Defendant's Exhibit 535FF
4 was marked for identification.)
10:59:15 5 MR. KODSI: Q. Dr. Pinkerton, you've been
10:59:17 6 handed Exhibit 535FF. That's the declaration that you
10:59:22 7 filed in this case; correct?
10:59:24 8 A. Yes.
10:59:25 9 Q. I just wanted to ask you a question. I
10:59:29 10 noticed that on page 1, paragraph 4, you've underlined
10:59:40 11 the phrase "I have focused on respiratory and pulmonary
10:59:45 12 toxicology and epidemiology." I say you have. Is that
10:59:48 13 your underlining there?
10:59:51 14 A. No.
10:59:51 15 Q. Do you understand -- Do you know whose
10:59:55 16 underlining that is?
10:59:56 17 A. I assume it is Mr. McGuire's.
10:59:59 18 Q. What's the basis for that assumption?
11:00:01 19 A. Because he told me he was going to send me a
11:00:05 20 declaration with things circled and underlined when I
11:00:10 21 met with him last week.
11:00:15 22 Q. And did he send you a declaration with things
11:00:19 23 that were circled and underlined?
11:00:22 24 A. Only this document.
11:00:23 25 Q. Did he indicate to you why he would be
11:00:26 26 circling and underlining certain things?
11:00:28 27 A. My impression was areas that were -- would be
11:00:33 28 unclear based on the use of "suggests," "may be," "can



11:00:40 1 be," those types of terms.
11:00:43 2 Q. Did he discuss with you at all any concerns
11:00:45 3 he had regarding the language that is circled here and
11:00:49 4 underlined that you have focused on epidemiology?
11:00:51 5 A. No.
11:00:55 6 Q. And last but not least --
11:01:13 7 What are we on? 535 --
11:01:16 8 THE REPORTER: GG.
11:01:18 9 MR. KODSI: GG.
10 (Whereupon, Defendant's Exhibit 535GG
11 was marked for identification.)
11:01:18 12 MR. KODSI: Q. That is your copy of
11:01:20 13 Dr. Witschi's deposition transcript?
11:01:23 14 A. On top, yes.
11:01:25 15 Q. And on the bottom are just the exhibits that
11:01:28 16 were introduced at that deposition?
11:01:37 17 A. Yes.
11:01:40 18 Q. Have you reviewed that transcript?
11:01:45 19 A. Of the deposition?
11:01:46 20 Q. Yes.
11:01:46 21 A. Only briefly.
11:01:48 22 Q. Actually, that's a good stopping point. No.
11:01:56 23 I'm sorry. One more.
11:01:58 24 There's a stack here let me mark as -- I
11:02:01 25 forgot about this. Do you want to mark this all as one?
11:02:18 26 535HH. That will be it.
27 (Whereupon, Defendant's Exhibit 535HH
28 was marked for identification.)



11:02:22 1 MR. KODSI: Q. 535HH is just a series of
11:02:25 2 scientific articles that in my review of those it looked
11:02:28 3 like you were an author on every one that was in that
11:02:32 4 stack.

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11:02:32 5 A. That is correct.
11:02:36 6 Q. Are those all of the scientific articles that
11:02:40 7 you have authored that you intend to rely on in this
11:02:43 8 case?
11:02:44 9 A. Yes.
11:02:49 10 Q. Are there scientific articles that you have
11:02:50 11 not authored or co-authored that you intend to rely on
11:02:55 12 for your opinions in this case?
11:02:59 13 A. With regard to epidemiology and children's
11:03:01 14 health with environmental tobacco smoke, yes.
11:03:04 15 Q. Do you have a file that contains those
11:03:06 16 articles in it?
11:03:07 17 A. No.
11:03:08 18 Q. Those are articles that you have reviewed in
11:03:10 19 the past but didn't retain a copy?
11:03:12 20 A. That's correct. Some of those articles would
11:03:14 21 be in my reference manager system, which contains many,
11:03:18 22 many articles, not all related to ETS.
11:03:23 23 Q. In your file, do you have any notes that you
11:03:26 24 have taken on articles that you intend to rely on for
11:03:30 25 this case?
11:03:30 26 A. No.
11:03:32 27 Q. All right. That's all I have for that.
11:03:35 28 Let's --



11:03:36 1 VIDEO OPERATOR: Take a break?
11:03:37 2 MR. KODSI: Yep.
11:03:38 3 VIDEO OPERATOR: Going off the record, the
11:03:41 4 time is 11:03.
5 (Recess taken from 11:03 to 11:16 a.m.)
11:16:12 6 VIDEO OPERATOR: Back on the record. The
11:16:17 7 time is 11:16.
11:16:19 8 MR. KODSI: Q. Dr. Pinkerton, you had
11:16:22 9 mentioned that there were going to be epidemiology
11:16:25 10 studies that you're going to rely on. Are those all
11:16:28 11 referenced in your declaration in this case?
11:16:31 12 A. No.
11:16:32 13 Q. Do you know which ones you're going to rely
11:16:35 14 on that aren't referenced in the declaration?
11:16:38 15 A. No.
11:16:39 16 Q. When you say no, is that because you haven't
11:16:43 17 yet determined that, or is that because you just don't
11:16:45 18 know off the top of your head the cites?
11:16:49 19 A. Both. I think that there -- I think that
11:16:54 20 there are lots of studies out there. And again, because
11:16:58 21 I don't rely on them specifically for doing my own
11:17:01 22 research, but I think from the perspective that I --
11:17:15 23 that they are relevant to the animal research that I do,
11:17:18 24 that I think there will be a number of studies that I
11:17:21 25 would just show the similarities that we see in our
11:17:23 26 animal studies.
11:17:24 27 Q. Do you intend to continue to review
11:17:26 28 literature after this deposition in order to prepare for



11:17:29 1 trial?
11:17:31 2 A. Of published literature? I would think so
11:17:35 3 because it's just part of my ongoing research program.
11:17:38 4 Q. What about literature that is already
11:17:41 5 available that you just haven't seen yet? Do you plan
11:17:44 6 on doing additional work reviewing past literature to
11:17:47 7 help prepare you for trial?
11:17:49 8 A. To a limited degree, yes.
11:17:56 9 Q. Do you think that reviewing that literature

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11:18:01 10 might change some of the opinions that you intend to
11:18:04 11 offer at trial?
11:18:05 12 A. No.
11:18:07 13 Q. Let's go through your declaration that I
11:18:10 14 believe yesterday we marked as Exhibit 528. It's under
11:18:16 15 that heavy stack.
11:18:31 16 A. Thanks.
11:18:31 17 Q. I just want to ask you briefly some questions
11:18:34 18 about statements in here and have you walk me through
11:18:38 19 some of your analysis.
11:18:43 20 If we could begin by turning to paragraph 13
11:18:49 21 on page 4, you make a statement in there on the first
11:19:00 22 sentence that "An important consideration for any
11:19:05 23 experimental study is to produce conditions which are
11:19:08 24 similar to those that individuals may be exposed." What
11:19:11 25 did you mean by that?
11:19:15 26 A. In doing experimental studies to measure or
11:19:20 27 to determine if there are health effects associated with
11:19:23 28 exposure to environmental tobacco smoke, I think it's



11:19:27 1 very important to be able to produce conditions that
11:19:34 2 would come to the best approximation of what true
11:19:38 3 environmental exposures would be from the perspective of
11:19:42 4 being within a range that would be relevant to what
11:19:48 5 people could actually be exposed to and then to
11:19:52 6 characterize those conditions, although I think in any
11:19:57 7 experimental studies, especially those that we do with
11:20:01 8 animals, that we're not going to reproduce exactly what
11:20:05 9 any individual would be exposed to because there's such
11:20:09 10 wide variations in what people are actually exposed to
11:20:13 11 both on a daily basis as well as in the locations that
11:20:20 12 they may be.
11:20:21 13 But I think it's very important to still try
11:20:27 14 to be as true to what would be a relevant kind of
11:20:31 15 exposure range that people would experience.
11:20:35 16 Q. And that's the point you're making in the
11:20:38 17 second sentence here is that exposures -- there are wide
11:20:41 18 fluctuations in human exposure to environmental tobacco
11:20:44 19 smoke?
11:20:45 20 A. That is correct.
11:20:45 21 Q. But you believe that in conducting animal
11:20:49 22 experiments, you want to stay within an exposure range
11:20:53 23 that is still realistic to human exposure?
11:20:55 24 A. For the types of studies that we're doing to
11:20:59 25 look at effects, potential effects, on perinatal
11:21:04 26 development, I would agree.
11:21:06 27 Q. Are there types of exposure studies where you
11:21:10 28 wouldn't agree with that statement?



11:21:12 1 A. I think because of the fact that we're really
11:21:15 2 looking at something that has to do with lung
11:21:23 3 development, perinatal exposures, that it would -- that
11:21:29 4 those type of studies really do require that we stay
11:21:32 5 within a range that is relevant. Where there may be
11:21:37 6 exceptions, maybe those if one is potentially looking
11:21:41 7 for mechanisms, where you're trying to establish some
11:21:49 8 specific effect, and due either to a limitation of time
11:21:55 9 or other experimental conditions, then those may justify
11:22:00 10 using higher concentrations.
11:22:02 11 Q. Now, the next sentence in paragraph 13 states
11:22:09 12 that "Experiments done in which there is voluntary
11:22:12 13 exposure to ETS does help to provide some insights as to
11:22:18 14 what the effects might be with acute exposures to

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11:22:21 15 smoke." What did you mean by provide some insights?
11:22:24 16 A. In the reference here, these are experiments
11:22:28 17 that would be done with human volunteers who would
11:22:31 18 actually be exposed to environmental tobacco smoke or
11:22:36 19 some surrogate of environmental tobacco smoke in some
11:22:39 20 sort of experimental setting or exposure chamber or
11:22:44 21 room. These studies would be helpful in measuring some
11:22:53 22 parameters, but I don't think this is the type of
11:22:57 23 studies that we could subject children to, so -- because
11:23:02 24 these type of studies, which would require someone to
11:23:07 25 volunteer to be exposed, I think requires consent, and
11:23:11 26 so we're probably dealing with adults instead of
11:23:16 27 children.
11:23:16 28 Q. And with respect to children, for reasons



11:23:19 1 you've explained, those types of studies haven't been
11:23:22 2 conducted?
11:23:22 3 A. In humans, that's correct.
11:23:25 4 Q. And so we're limited to animal data for that
11:23:29 5 type of research?
11:23:31 6 A. Not completely, because many of the
11:23:34 7 epidemiological studies that have been conducted have --
11:23:36 8 although they don't have a precise control on exposure
11:23:43 9 conditions, duration or concentrations, still, I think,
11:23:48 10 there is some relevance that can be gained from that.
11:23:52 11 Q. But you recognize that the epidemiology
11:23:55 12 studies that look at childhood exposures to ETS don't
11:24:00 13 really measure their exposures to ETS?
11:24:03 14 A. That is correct.
11:24:06 15 Q. Let's look at paragraph 17 on to page 7, line
11:24:20 16 2, where you state that there's "little experimental
11:24:24 17 data are available regarding the effects of prenatal and
11:24:27 18 postnatal exposure on lung growth and development," and
11:24:31 19 studies from your laboratory specifically address those
11:24:33 20 questions.
11:24:35 21 Other than the studies from your research
11:24:38 22 group, you would agree that there are very few studies
11:24:42 23 available that study these effects?
11:24:44 24 MR. BROOKEY: Objection, vague and ambiguous.
11:24:45 25 He can answer.
11:24:46 26 THE WITNESS: There's little data from the
11:24:50 27 perspective that you can have carefully controlled
11:24:53 28 exposures that only cover prenatal windows of



11:25:00 1 development or the postnatal period of development. I
11:25:06 2 think that there are a few studies that approach
11:25:11 3 addressing those issues but not to the degree that we
11:25:18 4 could do with animal studies.
11:25:22 5 MR. KODSI: Q. And the effects of ETS on
11:25:25 6 prenatal and postnatal lung development is something
11:25:27 7 that you are still studying?
11:25:28 8 A. That is correct.
11:25:29 9 Q. And you're continuing to do further research
11:25:32 10 in that area?
11:25:33 11 A. Yes.
11:25:34 12 Q. And you believe that more research is needed
11:25:36 13 to fully understand what the effects of ETS might be on
11:25:40 14 prenatal and postnatal lung development?
11:25:42 15 A. I think we've already established in our lab,
11:25:46 16 as well as what is out in the literature, what many of
11:25:51 17 those effects are. And I wouldn't be surprised with
11:25:55 18 further research that we may further find other
11:25:59 19 complications and detrimental effects with environmental

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11:26:04 20 tobacco smoke exposure during perinatal development.
11:26:07 21 Q. And your lab is focused primarily on trying
11:26:11 22 to find the mechanism for those effects; correct?
11:26:15 23 A. That is correct.
11:26:25 24 Q. Let's go to paragraph 23. On line 11, you're
11:26:39 25 talking about differences that were seen in early
11:26:41 26 postnatal life that were completely abolished by 100
11:26:45 27 days of age. Could you explain what you're talking
11:26:47 28 about there?



11:26:48 1 A. One of the approaches that we use is to try
11:26:54 2 to determine changes in the anatomy of the respiratory
11:26:58 3 tract based on using morphometric or stereologic
11:27:03 4 procedures so that we can in a very objective manner be
11:27:06 5 able to measure parameters of lung growth and
11:27:11 6 development. And what we found is that with exposures
11:27:17 7 under the conditions that we used for our animal studies
11:27:22 8 from birth to 100 days of age, that we saw significant
11:27:27 9 differences in the way the lungs were developing. But
11:27:31 10 those parameters that we were using, such as the tissue
11:27:36 11 volume for gas exchange, or the surface area for gas
11:27:41 12 exchange within the lungs of these animals, by 100 days
11:27:46 13 of age showed no significant differences from the
11:27:49 14 filtered air control animals.
11:27:51 15 Q. What does that mean? If they showed no
11:27:54 16 significant differences, does that mean that the effects
11:27:56 17 you saw didn't lead to any adverse health effects?
11:27:59 18 A. In terms of the anatomy of the lung, that
11:28:03 19 there was no observed adverse effects of exposure from
11:28:06 20 birth to 100 days of age.
11:28:09 21 Q. And we're talking about exposure to a
11:28:12 22 concentration of 1 milligram per cubic meter TSP?
11:28:17 23 A. Yes.
11:28:18 24 Q. And I want to walk back through -- I guess
11:28:22 25 there's something we needed to cover I've got in my
11:28:26 26 notes here. When we talk about a concentration of 1
11:28:29 27 milligram per cubic meter TSP, you're using total
11:28:33 28 suspended particles as a marker for environmental



11:28:37 1 tobacco smoke?
11:28:37 2 A. As one marker.
11:28:39 3 Q. Because environmental tobacco smoke as we
11:28:41 4 talked about yesterday is a complex mixture?
11:28:43 5 A. That's correct
11:28:44 6 Q. And at least today, science hasn't developed
11:28:46 7 a manner in which to measure a complex mixture as a
11:28:50 8 whole; correct?
11:28:50 9 A. That's correct.
11:28:51 10 Q. So how you measure complex mixtures is by
11:28:54 11 choosing a series of markers and measuring those?
11:28:57 12 A. Correct.
11:28:59 13 Q. When you measure markers in real world
11:29:02 14 environments, that gives you a way to compare exposures
11:29:07 15 in different environments?
11:29:07 16 A. Yes.
11:29:09 17 Q. And when you measure markers in animal
11:29:12 18 studies, that gives you a means for comparing the
11:29:14 19 concentration in your animal study with concentrations
11:29:17 20 in real world environments?
11:29:19 21 A. That's true, as well as to characterize
11:29:21 22 exactly what the exposure conditions are.
11:29:25 23 Q. And other than the one unpublished study we
11:29:30 24 talked about yesterday, all of your animal experiments

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11:29:33 25 have consistently used a concentration of 1 milligram
11:29:37 26 per cubic meter particles as a marker for environmental
11:29:42 27 tobacco smoke?
11:29:43 28 A. Yes. The majority of studies have used that



11:29:46 1 as a standard so that we can do comparisons as we do
11:29:52 2 additional studies or look at different windows of
11:29:55 3 exposure.
11:30:00 4 Q. I wanted to ask you about paragraph 24. You
11:30:10 5 indicate that in your studies you found -- I'm looking
11:30:13 6 at line 24 as well -- that you found "continuous
11:30:17 7 exposure to cigarette smoke was associated with a trend
11:30:20 8 of reduced cellular proliferation below that of control
11:30:24 9 values, though it did not attain a level of statistical
11:30:28 10 significance at 21 or 50 days of age." What does that
11:30:32 11 mean?
11:30:33 12 A. The lungs is really -- they are undergoing a
11:30:38 13 very rapid process of development postnatally. And so
11:30:43 14 there is a tremendous amount of cell proliferation that
11:30:46 15 is occurring especially in the first three weeks of life
11:30:52 16 in a rat.
11:30:56 17 And what we found is that there were
11:30:59 18 significant reductions in the terminal conducting
11:31:02 19 airways for the labeling of cells that would be taking
11:31:07 20 up a marker of -- it's a nucleotide that would be a
11:31:12 21 marker for cell proliferation. And with just normal
11:31:16 22 development, you'll see that the labeling index for cell
11:31:20 23 proliferation will decrease as animals get older.
11:31:28 24 And so typically, we're going to see that as
11:31:31 25 an animal becomes older, you will see less and less
11:31:37 26 effects in terms of there being a difference from
11:31:42 27 baseline proliferation rates.
11:31:46 28 And so, in essence, that's all I'm saying, is



11:31:51 1 that there are only significant times that we -- of
11:31:55 2 those time points that we looked at where we saw a
11:31:58 3 significant change or difference in those animals
11:32:02 4 exposed to ETS compared to the controls, was in the
11:32:06 5 first early periods of postnatal development, which are
11:32:11 6 really the most critical periods of development for the
11:32:14 7 child as well as for the respiratory tract.
11:32:17 8 Q. It's possible to have reduced cellular
11:32:20 9 proliferation without that leading to any adverse health
11:32:23 10 effect?
11:32:23 11 A. That's correct.
11:32:27 12 Q. We have just talked about earlier the fact
11:32:31 13 that you used a concentration of 1 milligram per cubic
11:32:34 14 meter for particles in your studies. Do you have an
11:32:38 15 opinion as to what the typical concentration of ETS is
11:32:42 16 in residential environments?
11:32:47 17 A. If you're referring to field studies, the
11:32:51 18 concentrations will be considerably lower than 1
11:32:54 19 milligram per cubic meter. These are based on studies
11:32:59 20 where the particle concentration is averaged over a unit
11:33:03 21 of time as an assessment of the concentration of
11:33:10 22 environmental tobacco smoke in a given location.
11:33:13 23 Q. And in field studies that have actually
11:33:16 24 measured environmental tobacco smoke in residential
11:33:19 25 environments, some of those studies actually used
11:33:21 26 personal monitoring devices to measure the
11:33:23 27 exposure; correct?
11:33:24 28 A. Yes.



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11:33:25 1 Q. What is your understanding of what a personal
11:33:27 2 monitoring device is?
11:33:30 3 A. These devices are simply to give a better
11:33:35 4 estimate of personal exposures to whatever particulate
11:33:42 5 or pollutant that one is trying to measure.
11:33:46 6 Q. These are devices that people actually wear
11:33:49 7 and measure the smoke in their breathing zone?
11:33:52 8 A. Yes.
11:33:52 9 Q. You're familiar with a study that was
11:33:55 10 conducted by Dr. Jenkins at Oak Ridge National
11:33:58 11 Laboratories using personal exposure measurements?
11:34:00 12 A. I'm aware of a number of his studies.
11:34:03 13 Q. Are you familiar with the study that's known
11:34:06 14 as the 16-city study?
11:34:08 15 A. I have heard of that study, yes.
11:34:11 16 Q. Is that one that you have read?
11:34:13 17 A. I've read parts of it.
11:34:14 18 Q. Do you have an opinion as to what the typical
11:34:17 19 levels in residential environments would be for
11:34:19 20 particulars in ETS?
11:34:20 21 MR. BROOKEY: Objection. It's vague and
11:34:21 22 ambiguous. It's not limited to time or location. He
11:34:25 23 can try to answer.
11:34:26 24 THE WITNESS: Again, I would think that
11:34:28 25 exposures in residential -- in residences are really
11:34:33 26 dependent upon who is smoking, how often are they
11:34:40 27 smoking, where are they doing that smoking, where is the
11:34:44 28 measure -- where are the measurements actually being



11:34:47 1 taken.
11:34:48 2 MR. KODSI: Q. I think you and Dr. Joad had
11:34:51 3 published in the past that typical residential exposures
11:34:54 4 range from 20 micrograms per cubic meter up to 200
11:34:58 5 micrograms per cubic meter for particles. Is that a
11:35:01 6 number that you agree with?
11:35:02 7 A. Yes. From the literature from field studies,
11:35:06 8 that's -- that would be a range.
11:35:14 9 Q. Do you have an opinion as to how those
11:35:16 10 numbers would compare with the average in California?
11:35:19 11 MR. BROOKEY: Objection. That is still vague
11:35:21 12 and ambiguous. He can answer.
11:35:23 13 THE WITNESS: Again, I think it's dependent
11:35:25 14 upon whether there is smoking that's taking place in a
11:35:29 15 residence. And I would think that those individuals in
11:35:36 16 California that opt to smoke and based on their
11:35:41 17 preference of where they're smoking, that they would
11:35:45 18 generate the same types of secondhand smoke that would
11:35:49 19 be found elsewhere.
11:35:51 20 MR. KODSI: Q. Are you familiar with any
11:35:52 21 evidence on smoker prevalence or smoker exposures that
11:35:56 22 are specific to California?
11:35:58 23 A. Only from the perspective of the percentage
11:36:01 24 of residents of California who are smoking at this time.
11:36:06 25 Q. And what would that be?
11:36:07 26 A. My understanding is the prevalence of smoking
11:36:10 27 is around 18 percent.
11:36:15 28 Q. Do you have an opinion as to how that



11:36:18 1 compares with the national average?
11:36:19 2 A. My understanding is that it is lower than the
11:36:24 3 national average.
11:36:25 4 Q. Is it your understanding that it's one of the
11:36:27 5 lowest -- California has one of the lowest smoking

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11:36:30 6 prevalence percentages in the country?
11:36:33 7 A. I'm not aware.
11:36:38 8 Q. Is that an area that you would recognize
11:36:40 9 Dr. Jenkins as having expertise in, ETS exposures in
11:36:45 10 California?
11:36:45 11 A. I think that Dr. Jenkins has done a number of
11:36:50 12 studies that have been published that reflect his
11:36:52 13 ability to do those types of studies.
11:36:56 14 Q. Let's go to paragraph 29. On line 16, you
11:37:26 15 refer to your model being highly analogous to the
11:37:30 16 development of childhood asthma in humans. I was
11:37:34 17 wondering if you could walk me through your basis for
11:37:37 18 that opinion.
11:37:41 19 A. This statement is based on the fact that we
11:37:46 20 have found that these animals will develop increased
11:37:53 21 airway reactivity that is reminiscent of what happens
11:38:00 22 with children who have asthma who also have increased
11:38:04 23 airway reactivity.
11:38:06 24 Q. And again, it is possible to produce
11:38:10 25 increased airway reactivity without that resulting in
11:38:14 26 any adverse health effects?
11:38:16 27 A. I think an increase in airway reactivity
11:38:21 28 actually is an adverse health effect. I think it's



11:38:26 1 associated with the fact that the airways are more
11:38:30 2 ticklish; they're more prone to changes that lead to
11:38:36 3 airway narrowing, which would be problematic for normal
11:38:41 4 respiration.
11:38:42 5 Q. When you talk about increased airway
11:38:45 6 reactivity, does that mean that there's a baseline for
11:38:49 7 airway reactivity that you expect to see?
11:38:51 8 A. Yes.
11:38:52 9 Q. At what point does increase in that baseline
11:38:55 10 become an adverse health effect?
11:38:59 11 A. I think that is more difficult to answer, but
11:39:05 12 I would certainly think that any indication where you
11:39:10 13 consistently and significantly see an increase in airway
11:39:15 14 reactivity to a pharmacological challenge would be
11:39:19 15 indicative that there is something abnormal about the
11:39:23 16 lungs and the function of the lungs that one would be
11:39:29 17 concerned about.
11:39:29 18 Q. Is increased airway reactivity something that
11:39:33 19 you would -- that a clinician would clinically diagnose
11:39:36 20 a child as having?
11:39:39 21 A. That would if they do methacholine
11:39:45 22 challenges, yes.
11:39:47 23 Q. And that is a clinical term of art for a
11:39:51 24 particular diagnosis?
11:39:51 25 A. Right. Basically, it's part of pulmonary
11:39:54 26 function testing. So that one could look at a
11:39:59 27 methacholine challenge as a way of evaluating airway
11:40:02 28 sensitivity.



11:40:03 1 Q. At what point in a pulmonary function test
11:40:14 2 would the increase you see in airway reactivity lead to
11:40:18 3 your conclusion that it was an adverse health effect?
11:40:21 4 A. Again, I think those are somewhat difficult
11:40:24 5 to address, but I think one can look at decrements in
11:40:29 6 pulmonary function that can be as few as 5 percent
11:40:37 7 decrements in pulmonary function, and those can be
11:40:40 8 considered as significant as an -- in terms of being an
11:40:46 9 adverse effect.
11:40:46 10 Q. How do you measure decrements in pulmonary

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11:40:50 11 function?
11:40:51 12 A. This is typically based on looking at lung
11:41:01 13 function parameters such as vital capacity, especially
11:41:04 14 forced expiratory volumes, peak flow rates, a variety of
11:41:11 15 different things that one can look at.
11:41:14 16 Decrements in lung function are typically
11:41:19 17 determined by seeing changes over a period of time of
11:41:26 18 having lower values in forced expiratory volume rates or
11:41:32 19 peak flow rates from an earlier period in time, would be
11:41:38 20 one way of --
11:41:39 21 Q. And the way you're describing how to measure
11:41:42 22 decrements in pulmonary function is we're talking about
11:41:45 23 for humans; correct?
11:41:47 24 A. Yes.
11:41:47 25 Q. Is the analysis different for animals?
11:41:51 26 A. There are a number of pulmonary function
11:41:55 27 tests that can be done on animals, also. But it is more
11:41:59 28 difficult to get an animal to go through an ex -- a



11:42:04 1 forced expiratory flow maneuver and different things
11:42:07 2 like that. You just can't tell them to blow out.
11:42:11 3 Q. How did you account for --
11:42:33 4 (Discussion off the record)
11:42:46 5 MR. KODSI: Q. How in your animal studies do
11:42:50 6 you measure decrements in pulmonary function?
11:42:54 7 A. Through the methacholine challenge.
11:42:56 8 So these are done where we can actually
11:42:57 9 establish a baseline value for airway tone. This is in
11:43:02 10 an isolated perfused system where we then can increase
11:43:08 11 the dose of methacholine and look at a percent change
11:43:13 12 from original airway resistance or lung compliance.
11:43:19 13 Q. Now, we began this discussion by talking
11:43:22 14 about your conclusion in paragraph 29 of your
11:43:25 15 declaration that this rat model is highly analogous to
11:43:28 16 the development of asthma; correct?
11:43:31 17 A. Yes.
11:43:31 18 Q. And you would agree that, as we discussed
11:43:34 19 yesterday, that that's a conclusion in 1992 that you
11:43:39 20 disagreed with?
11:43:41 21 A. At that time we were not doing studies to
11:43:44 22 look at pulmonary function using these windows of
11:43:48 23 exposure.
11:43:50 24 Q. But in 1992, you did reach a different
11:43:54 25 conclusion?
11:43:55 26 A. Yeah. At that particular time, we did not
11:44:00 27 see any of these kind of changes.
11:44:11 28 Q. I'm going to ask you about paragraph 32 on



11:44:14 1 page 16. That paragraph begins with you stating that
11:44:25 2 "Exposure to a variety of toxicants and/or conditions
11:44:28 3 during lung development has the potential to
11:44:31 4 significantly affect the overall growth and function of
11:44:35 5 the respiratory system." I assume there what you're
11:44:39 6 saying is there is more than just ETS there that might
11:44:45 7 affect those issues?
11:44:46 8 A. That is correct.
11:44:47 9 Q. What are the variety of toxicants, to the
11:44:50 10 extent you can list them, that you're discussing there?
11:44:53 11 A. Well, actually, the toxicants that really are
11:44:59 12 best described, actually, are environmental tobacco
11:45:03 13 smoke. But there are a variety of other things that may
11:45:07 14 lead to decrements or alterations in lung development
11:45:13 15 that could include other environmental pollutants,

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11:45:19 16 concerns that may be in ozone, or acid aerosols may have
11:45:29 17 some impact on lung development. But there may also be
11:45:34 18 other kind of environmental pollutants that may also
11:45:39 19 impact on the growth and function of the respiratory
11:45:42 20 system.
11:45:43 21 Q. Are there any others that come to mind other
11:45:47 22 than ozone and acid aerosols?
11:45:48 23 A. Actually, other than environmental tobacco
11:45:51 24 smoke, those are the ones that I would know most about
11:45:57 25 and that really are most studied so far in the
11:46:03 26 literature.
11:46:04 27 Q. When you say that they're ones that you would
11:46:07 28 know the most about, there may be others, but it's not



11:46:11 1 an area that you studied?
11:46:12 2 A. Actually, it's an area that we know very
11:46:15 3 little information about, and it is in part the reason
11:46:19 4 why this second part of the declaration, which is really
11:46:22 5 an amendment because this is my presentation at the
11:46:25 6 workshop for children's health, that I was making these
11:46:30 7 comments. And it really is an area that requires a lot
11:46:35 8 more research.
11:46:35 9 Q. So there are toxicants that may affect the
11:46:42 10 overall growth and function of the respiratory system
11:46:45 11 that just haven't been studied yet?
11:46:47 12 A. That's right.
11:46:48 13 Q. And so there are potentially toxicants that
11:46:53 14 will affect the overall growth and function of the
11:46:56 15 respiratory system that science is not yet aware exist?
11:47:01 16 A. That's correct.
11:47:02 17 Q. So when epidemiology studies are designed to
11:47:06 18 study effects on overall growth and function of the
11:47:10 19 respiratory system, there are toxicants that are
11:47:13 20 confounding factors that those studies can't adjust for?
11:47:18 21 A. Actually, I think that in part is a true
11:47:25 22 statement. I think, though, that there are lots of
11:47:28 23 things that we know are toxicants to adults, but we just
11:47:34 24 haven't studied them as toxicants to children.
11:47:38 25 And the question that always arises is,
11:47:41 26 does -- will a child during development and all the
11:47:48 27 changes that they're going through, will they respond in
11:47:51 28 the same manner to a toxicant than an adult will? And I



11:47:58 1 think it's really pretty much concluded that children
11:48:01 2 are not little adults, but they are a totally different
11:48:04 3 beast, if you will have it, but that really we have to
11:48:08 4 deal with from the perspective that they may be a very
11:48:12 5 sensitive population to toxicants that may predispose
11:48:20 6 them and put them at greater risk than adults.
11:48:24 7 Q. So at least with respect to children,
11:48:27 8 although we may know a list of toxicants that affect
11:48:31 9 adults, the list for children may be larger?
11:48:35 10 A. Right. Or it may be the same toxicants, but
11:48:38 11 we have just a different response.
11:48:41 12 Q. And if the list for children might be larger,
11:48:44 13 again, that adds to the possibility that the
11:48:48 14 epidemiology studies may not adjust for all of the
11:48:51 15 confounding factors when looking at children and
11:48:54 16 respiratory effects?
11:48:55 17 MR. BROOKEY: Objection. Incomplete
11:48:57 18 hypothetical, lacks foundation, calls for speculation.
11:48:59 19 But he can answer.
11:49:00 20 THE WITNESS: Well, I think there's always

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11:49:04 21 the potential for confounding factors. But I think that
11:49:09 22 there are a number of things that if -- I guess what I'm
11:49:16 23 trying to say is that toxicants, especially those that
11:49:20 24 may be airborne, are not something that are going to be
11:49:26 25 problematic in measuring. So I think that we should be
11:49:32 26 able to tease out at least to some degree the
11:49:39 27 confounding factors that potentially may be a problem in
11:49:44 28 trying to interpret our results, especially in



11:49:49 1 epidemiological studies.
11:49:50 2 MR. KODSI: Q. Let me ask you about the end
11:49:53 3 of paragraph 32 over on page 17. You make the statement
11:49:58 4 that "In contrast, exposure to environmental toxicants
11:50:02 5 such as secondhand cigarette smoke may actually
11:50:05 6 accelerate the maturation of specific cell types in the
11:50:09 7 fetal lung, but the effects of such a change on overall
11:50:15 8 lung function in the newborn to the adult are unknown."
11:50:20 9 What did you mean by that?
11:50:22 10 A. What I meant here is that usually we're
11:50:26 11 concerned about compromising the growth of the lung, but
11:50:31 12 we -- here was an example in which we actually saw an
11:50:36 13 environmental toxicant that accelerated the maturation
11:50:38 14 of a specific cell type in the fetal lung. What we
11:50:43 15 don't know is, because that's an alteration from the
11:50:46 16 normal developmental profile, does that kind of change
11:50:55 17 down the road into adulthood. Is that actually going to
11:50:58 18 have an impact that the developmental timing was
11:51:03 19 altered.
11:51:04 20 Q. And so that's what we were talking about
11:51:07 21 earlier when we were talking about your E.P.A.
11:51:09 22 presentation, is that science still doesn't know whether
11:51:14 23 these effects are continuing into adulthood?
11:51:18 24 A. For a number of things, yes, that is correct.
11:51:22 25 Q. And for the health effects that you're going
11:51:25 26 to testify at this trial with respect to ETS, those
11:51:29 27 questions remain unanswered as well?
11:51:31 28 A. From the perspective that we clearly know



11:51:33 1 that there are health effects associated with children
11:51:36 2 and exposure to environmental tobacco smoke, but we
11:51:41 3 don't know what would happen -- even if those children,
11:51:45 4 you stop the exposures to environmental tobacco smoke,
11:51:48 5 we still don't know how to -- we don't know -- we cannot
11:51:53 6 predict exactly whether they will -- what impact that
11:51:58 7 will have as adults.
11:52:04 8 Q. Let's change topics a little bit.
11:52:10 9 I want to talk a little bit about the
11:52:14 10 epidemiology. I think my understanding from yesterday
11:52:19 11 was that you viewed -- one of the purposes of your
11:52:22 12 animal studies was to try to find mechanisms responsible
11:52:28 13 for the health effects that had been reported in the
11:52:32 14 epidemiology studies in ETS on children?
11:52:38 15 A. Yes.
11:52:39 16 Q. In your review of the epidemiology on ETS in
11:52:45 17 children, would you agree that you are interested in
11:52:48 18 reviewing the conclusions that those studies reached to
11:52:51 19 see which mechanisms would be worth studying in animal
11:52:54 20 experiments?
11:52:55 21 A. No.
11:52:56 22 Q. Okay. What was your purpose in reviewing the
11:52:59 23 epidemiology?
11:53:00 24 A. If I understood your question correctly, was
11:53:05 25 the epidemiology and the conclusions that they found the

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11:53:09 26 sorts of things that we were interested in trying to
11:53:14 27 establish in the animal model? Was that the question?
11:53:19 28 Q. Right, that is the question.

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11:53:22 1 A. And my answer to that is no, because we
11:53:26 2 simply wanted to look at all parameters of lung growth
11:53:29 3 and development and not necessarily relate it to a
11:53:32 4 disease or to a symptom that has been noted and
11:53:38 5 established in children.
11:53:41 6 The reason for this is that we really wanted
11:53:44 7 to establish, as you have said, mechanisms for effects
11:53:49 8 of exposure to environmental tobacco smoke. So we
11:53:55 9 looked at things such as the growth of the lungs, the
11:53:59 10 formation of different tissue compartments, the degree
11:54:03 11 of maturation and cellular differentiation, the presence
11:54:09 12 of specific cell populations within the lungs, as a way
11:54:15 13 of just basically understanding does exposure to
11:54:19 14 environmental tobacco smoke under the conditions that we
11:54:22 15 generate, does that cause any change from the control
11:54:26 16 animals.
11:54:27 17 So again, our endpoint was not to say there's
11:54:32 18 a disease at the end of the road here. But we really
11:54:37 19 wanted to know is there a change, and if that change is
11:54:40 20 occurring, what is it; and also, hopefully to be able to
11:54:44 21 establish is that a permanent change, or will it -- or
11:54:48 22 will there be -- will the lungs catch up or slow down or
11:54:53 23 whatever to bring it back to a normal condition as we
11:54:58 24 see in the control animals.
11:55:01 25 Q. Do you view your animal studies as helping to
11:55:04 26 lend biological plausibility to the epidemiology?
11:55:08 27 A. I think it can establish that kind of
11:55:12 28 connection, that type of link.

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11:55:15 1 Q. And in the absence if -- it's a hypothetical,
11:55:20 2 I know. But let's assume there were no epidemiology on
11:55:23 3 children and ETS. Then you would agree that your animal
11:55:27 4 studies alone do not demonstrate adverse health effects
11:55:31 5 caused by ETS?
11:55:33 6 MR. BROOKEY: Objection. Incomplete
11:55:34 7 hypothetical, lacks foundation, calls for speculation,
11:55:38 8 misstates the prior testimony. But he can answer.
11:55:42 9 THE WITNESS: What's the bottom line on that
11:55:45 10 question?
11:55:45 11 MR. KODSI: Q. I'm just trying to understand
11:55:48 12 how your studies fit in, that if we didn't have ETS
11:55:53 13 epidemiology on childhood exposures to ETS; that didn't
11:55:58 14 exist, then your studies in a vacuum don't demonstrate
11:56:03 15 that ETS causes any particular adverse health effects?
11:56:07 16 MR. BROOKEY: Same objections.
11:56:09 17 MR. KODSI: Q. Would you agree with that?
11:56:13 18 A. I'm not sure I would agree with that. Could
11:56:17 19 I tell you what I would conclude?
11:56:19 20 Q. Sure.
11:56:22 21 A. If we didn't have epidemiology and we were
11:56:25 22 just using simply animals to predict health effects or,
11:56:29 23 you know, what things we should be concerned about, then
11:56:32 24 what I would say is that our animal studies have helped
11:56:37 25 us to show that there are very critical windows of
11:56:41 26 exposure to environmental tobacco smoke, that those
11:56:45 27 windows of exposure occur in the perinatal period when
11:56:50 28 there are significant and dramatic changes in lung

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11:56:54 1 development that occur both prenatally as well as

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11:56:59 2 postnatally, and that those type of changes during --
11:57:04 3 that are occurring, if those are altered in whatever way
11:57:08 4 by exposure to environmental tobacco smoke, those
11:57:12 5 effects may actually be -- persist as an adverse effect
11:57:18 6 even if you stop exposure to the environmental tobacco
11:57:21 7 smoke.
11:57:22 8 Now, if we look at other windows of exposure,
11:57:38 9 let's say that on our animals that we only worked with
11:57:42 10 adult animals with some of the conditions that we have,
11:57:44 11 our studies would not be able to demonstrate any
11:57:45 12 effects. And so I guess that's what I'm saying. So the
11:57:49 13 bottom line would be the most sensitive populations for
11:57:52 14 the adverse health effects of environmental tobacco
11:57:55 15 smoke are children, both the unborn child as well as the
11:57:59 16 young child. And that's really the -- based on our
11:58:04 17 animal studies, that would be the group that I would go
11:58:07 18 to and say there's where the work needs to be done to
11:58:12 19 protect those individuals.
11:58:13 20 Q. Based on your animal studies, you'd recommend
11:58:17 21 that epidemiology studies be conducted on that
11:58:20 22 population?
11:58:21 23 A. Yes.
11:58:22 24 Q. Now, in your review of the epidemiology
11:58:25 25 studies, I'd like you to walk me through how you
11:58:28 26 select -- you mentioned that you haven't read all of
11:58:31 27 them.
11:58:31 28 A. That's correct.



11:58:32 1 Q. I understand that the literature of
11:58:35 2 epidemiology studies on childhood -- children and ETS
11:58:38 3 exposures is fairly voluminous; you would agree with
11:58:40 4 that?
11:58:41 5 A. Yes.
11:58:42 6 Q. How did you select which ones to review and
11:58:45 7 which ones not to review?
11:58:46 8 A. This is something where we can do a Medline
11:58:50 9 or a Melvyl search and insert in keywords as a way of
11:58:58 10 getting an initial list of potential papers that would
11:59:04 11 be of value to look at. Then I would look at the
11:59:09 12 relevance to whether it addresses issues on
11:59:14 13 children's --
11:59:15 14 MR. KODSI: Water? Can we have --
11:59:18 15 THE WITNESS: Excuse me.
11:59:22 16 -- to -- actually, great. Okay.
11:59:32 17 But I would want to look at it from that
11:59:37 18 perspective. I would want to also consider the methods
11:59:42 19 that were used; is this a peer-reviewed paper; is it --
11:59:47 20 what journal is it published in?
11:59:52 21 And also, on many of these studies, I would
11:59:56 22 be working very closely with collaborators, especially
12:00:01 23 those clinicians such as Dr. Joad, who has experience
12:00:08 24 with working with children and with also having a very
12:00:15 25 good grasp on the literature with regard to children's
12:00:19 26 health and issues of children's health.
12:00:23 27 MR. KODSI: Q. How do you attempt to
12:00:25 28 differentiate between study quality?



12:00:34 1 A. Well, again, I think it's important that it
12:00:38 2 be published in the appropriate journal, that it be
12:00:42 3 peer-reviewed, how often is it cited as a relevant study
12:00:50 4 or in reference to other ongoing studies. I think those
12:00:57 5 are typically good indications that these would
12:01:01 6 represent valid studies.

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12:01:05 7 Q. Do you have a manner in which you can
12:01:08 8 differentiate between a well-conducted and
12:01:10 9 poorly-conducted epidemiologic study?
12:01:16 10 A. Other than the criteria that I've talked
12:01:21 11 about?
12:01:21 12 Q. Yes, other than that criteria.
12:01:23 13 A. Other than just reading it and, you know,
12:01:29 14 again, following the criteria that I have mentioned,
12:01:33 15 there wouldn't be anything else that I would necessarily
12:01:37 16 use.
12:01:38 17 Q. Now, you have never designed an epidemiologic
12:01:42 18 study?
12:01:45 19 A. That is correct.
12:01:48 20 Q. And it wouldn't be within your expertise to
12:01:51 21 design an epidemiologic study, would it?
12:01:53 22 A. Not --
12:01:54 23 MR. BROOKEY: Objection to this as it calls
12:01:58 24 for a legal conclusion. But he can answer.
12:02:00 25 THE WITNESS: Because I do only experimental
12:02:02 26 studies in animals, the epidemiological approach is not
12:02:08 27 as relevant to what I'm doing. So that has a lot to do
12:02:15 28 with why our study design does not follow for



12:02:20 1 epidemiological studies.
12:02:21 2 MR. KODSI: Q. Right. And conducting an
12:02:26 3 epidemiologic study would not be something that you
12:02:29 4 would be comfortable doing?
12:02:30 5 A. That is correct.
12:02:31 6 Q. You would agree with me that epidemiologic
12:02:36 7 studies produce measures of statistical association?
12:02:40 8 A. Yes.
12:02:41 9 Q. Are epidemiology studies alone sufficient to
12:02:46 10 prove causation?
12:02:47 11 MR. BROOKEY: Objection to the extent it
12:02:49 12 calls for a legal conclusion. But he can answer.
12:02:52 13 THE WITNESS: I think epidemiological studies
12:02:56 14 alone lead to a deficit in our true understanding of
12:03:01 15 causes of and effects. But I think that they give us
12:03:08 16 the direction that we need to better understand issues
12:03:16 17 of causation.
12:03:24 18 MR. KODSI: Q. Do you equate statistical
12:03:26 19 association with causation?
12:03:31 20 MR. BROOKEY: Same objection.
12:03:32 21 THE WITNESS: I think when you have
12:03:37 22 statistical association that is reproducible in a number
12:03:44 23 of studies, you keep on seeing the same association time
12:03:48 24 after time after time, that that's sufficient for
12:03:52 25 causation.
12:03:53 26 MR. KODSI: Q. Does that reproducible
12:03:57 27 statistical association need to be statistically
12:04:00 28 significant?



12:04:06 1 A. In each individual study?
12:04:09 2 Q. Yes.
12:04:13 3 A. Well, ideally, if you're going to give
12:04:16 4 causation, that you would want it to be statistically
12:04:20 5 significant.
12:04:21 6 Q. Are you familiar with the term "risk factor"?
12:04:24 7 A. Yes.
12:04:25 8 Q. Do you differentiate between risk factor and
12:04:29 9 cause?
12:04:33 10 A. I would think that they should have different
12:04:36 11 meanings.

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12:04:37 12 Q. How would you define risk factor?
12:04:41 13 A. Basically, this would be the -- my definition
12:04:47 14 would be one in which weighing everything, what is the
12:04:55 15 potential for something to happen in terms of a disease
12:05:02 16 or in terms of some sort of change that would occur --
12:05:13 17 that is known to occur because of exposure to a certain
12:05:16 18 kind of component.
12:05:21 19 "Causation" was the other term?
12:05:24 20 Q. Uh-huh.
12:05:26 21 MR. BROOKEY: And I'll object to the extent
12:05:28 22 it calls for a legal definition of causation. But he
12:05:30 23 can answer as to his understanding.
12:05:33 24 THE WITNESS: From my understanding, I think
12:05:37 25 this would be an unequivocal. This is -- This
12:05:45 26 particular component will cause this disease.
12:05:49 27 MR. KODSI: Q. Okay. And that's how you
12:05:51 28 would differentiate between cause and risk factor?



12:05:53 1 A. Right.
12:05:55 2 Q. Let's talk about some individual concepts in
12:05:57 3 epidemiology. We talked earlier about statistical
12:06:00 4 significance. You agree that's a very fundamental and
12:06:05 5 important principle in epidemiology; correct?
12:06:07 6 A. Yes.
12:06:08 7 Q. What do we mean when we say stat -- what is
12:06:12 8 statistical significance?
12:06:14 9 A. To me, that would mean that it would be an
12:06:19 10 occurrence of some feature that is beyond just mere
12:06:26 11 chance occurrence.
12:06:28 12 Q. And in reviewing the epidemiology studies
12:06:32 13 that you reviewed, did you evaluate them to see if they
12:06:36 14 reported statistically significant results?
12:06:38 15 A. In a number of these studies, I have looked
12:06:43 16 at that, yes.
12:06:44 17 Q. And in a number of the studies that you have
12:06:48 18 reviewed, they have failed to report statistically
12:06:51 19 significant results; correct?
12:06:52 20 A. In a number of studies.
12:06:54 21 Q. And when we say that those studies have
12:06:57 22 failed to report statistically significant results,
12:06:59 23 we're talking about the diseases and health effects that
12:07:01 24 you're going to testify about at this trial; correct?
12:07:04 25 A. Many of those are -- have to do with
12:07:06 26 respiratory symptoms: wheezing, cough, irritation,
12:07:12 27 those sorts of things that may be associated with
12:07:16 28 chronic respiratory problems. And so some of those I



12:07:25 1 think are an association with what we're talking about,
12:07:31 2 and this is changes in airway reactivity or changes in
12:07:37 3 lung function.
12:07:43 4 Q. Is that because the epidemiology studies on
12:07:46 5 children and ETS don't actually measure changes in
12:07:51 6 airway reactivity?
12:07:53 7 A. Actually, I think some of those symptoms
12:07:56 8 actually are a reflection of changes in airway
12:08:00 9 reactivity, but they actually may provide a marker that
12:08:04 10 doesn't require as extensive studies such as pulmonary
12:08:11 11 function testing.
12:08:12 12 Q. Not all of the epidemiology studies of
12:08:15 13 children and ETS employ pulmonary function testing?
12:08:19 14 A. As much as looking at respiratory systems,
12:08:23 15 yes.
12:08:25 16 Q. When we talk about statistical significance,

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12:08:29 17 you're familiar with confidence intervals?
12:08:31 18 A. Yes.
12:08:32 19 Q. What are confidence intervals?
12:08:36 20 A. Basically, this would be, if I'm
12:08:41 21 understanding this correctly, would be the range of
12:08:47 22 values where you would find most of your data falling
12:08:57 23 and --
12:08:58 24 Q. What is the typical confidence interval that
12:09:02 25 you have seen in the epidemiological literature?
12:09:08 26 A. Well, again, from the -- I'm not sure if I
12:09:13 27 know.
12:09:14 28 Q. Let me re -- That question is not worded



12:09:17 1 correctly. Let me backtrack that.
12:09:20 2 You're familiar with the use of 95 percent
12:09:22 3 confidence intervals?
12:09:24 4 A. Yes.
12:09:24 5 Q. And you would agree that 95 percent
12:09:26 6 confidence intervals are the standard for epidemiologic
12:09:29 7 studies?
12:09:30 8 A. Right. But also, aren't there studies where
12:09:35 9 they're really showing an odds ratio? Basically, it
12:09:39 10 involves the confidence level idea.
12:09:45 11 Q. I guess I should have asked you that first.
12:09:50 12 Epidemiologic studies report relative risks or odds
12:09:54 13 ratios; correct?
12:09:55 14 A. Uh-huh.
12:09:56 15 Q. Why don't you define for me what your
12:09:59 16 understanding of a relative risk is.
12:10:08 17 A. My understanding would be that this is just
12:10:14 18 simply an indication of whether a population or group of
12:10:20 19 individuals are actually showing a deviation from
12:10:24 20 another population of individuals that may not be
12:10:27 21 exposed to the compound that is of interest in an
12:10:34 22 epidemiological study.
12:10:39 23 Q. So it's a comparison between a control group
12:10:43 24 and an exposed group in an epidemiologic study?
12:10:47 25 A. That is my understanding.
12:10:50 26 Q. What does a relative risk of 1.0 mean?
12:10:53 27 A. That there is no difference between -- from a
12:10:59 28 normal population, that there's actually no risk of



12:11:03 1 there being something going on in that group.
12:11:08 2 Q. If you have a relative risk below 1.0, what
12:11:12 3 does that mean?
12:11:18 4 A. From a biological relevance point of view, I
12:11:24 5 don't know of any meaning for that.
12:11:27 6 Q. What about a relative risk above 1.0?
12:11:31 7 A. That that would represent that you were at
12:11:37 8 greater risk for having some sort of effect take place.
12:11:42 9 Q. Now, what if you have a relative risk above
12:11:46 10 1.0 but your 95 percent confidence interval includes 1.0
12:11:53 11 or below? What does that mean?
12:11:56 12 MR. BROOKEY: Object. That's an incomplete
12:11:58 13 hypothetical, lacks foundation. He can answer.
12:12:01 14 THE WITNESS: And I would assume that, based
12:12:04 15 on what you've told me, that there would not be a
12:12:06 16 significant effect.
12:12:07 17 MR. KODSI: Q. So although that would be an
12:12:11 18 example of a relative risk above 1.0, it wouldn't be
12:12:14 19 statistically significant, and you couldn't rely on it
12:12:18 20 to conclude that there was a health effect?
12:12:20 21 MR. BROOKEY: Same objections. And it's now

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12:12:24 22 compound. But he can answer.
12:12:25 23 THE WITNESS: And again, if the confidence
12:12:27 24 limits don't include that, that range, then I would say
12:12:32 25 that you can't conclude there's a significant effect
12:12:35 26 there.
12:12:35 27 MR. KODSI: Q. And that's if the confidence
12:12:37 28 limits include a number 1.0 or below? Just so that I'm



12:12:42 1 clear I understood what you just said.
12:12:44 2 MR. BROOKEY: Same objections. Asked and
12:12:45 3 answered. He can answer.
12:12:58 4 THE WITNESS: And again, I would think that
12:13:00 5 that would be true.
12:13:01 6 MR. KODSI: Q. Okay. We've talked a little
12:13:03 7 bit already today about the concept of confounding, but
12:13:06 8 I don't know that we've really defined it and what it
12:13:09 9 means. Could you define for me what you understand
12:13:12 10 confounding to be in epidemiologic studies?
12:13:14 11 A. These would be factors that would actually --
12:13:16 12 that are not related to the -- what you're interested in
12:13:19 13 studying, but they may actually cause a change in the
12:13:23 14 parameter that you're measuring.
12:13:25 15 Q. And in reviewing the epidemiologic studies
12:13:29 16 that you've reviewed, did you assess them to see whether
12:13:32 17 they accurately adjusted for confounding factors?
12:13:37 18 A. Yes.
12:13:40 19 Q. Which confounding factors do you find
12:13:45 20 important that the epidemiology studies should adjust
12:13:49 21 for with respect to lung growth and development in
12:13:53 22 children?
12:13:54 23 A. Well, I think those things that are important
12:13:58 24 would probably be ethnicity, socioeconomic status, that
12:14:06 25 it may also involve nutritional status.
12:14:19 26 Q. What about other risk factors for those same
12:14:23 27 disease endpoints? Should epidemiologic studies try to
12:14:27 28 adjust for those as confounders?



12:14:29 1 A. Especially if one is looking -- Yes, and one
12:14:34 2 would be with the socioeconomic status. I guess it is
12:14:38 3 not clear from that necessarily where a person may live,
12:14:42 4 but again, it's important to keep in mind is this urban;
12:14:48 5 is it rural in terms of where a child may be growing up;
12:14:51 6 what are the -- what's the air quality in the
12:14:55 7 environment, also.
12:15:01 8 Q. And yesterday, we talked about a series of
12:15:04 9 alternative factors that may cause some of the health
12:15:08 10 effects that you're going to testify about. Are those
12:15:11 11 factors that you reviewed to see if they were adjusted
12:15:15 12 for in the epidemiologic studies?
12:15:17 13 A. I'm not sure I remember what the alternative
12:15:20 14 factors were.
12:15:21 15 Q. We talked about exposure to aero allergens,
12:15:25 16 for example. Should exposure to aero allergens be
12:15:29 17 something that the epidemiology studies adjust for?
12:15:31 18 MR. BROOKEY: Objection. Incomplete
12:15:33 19 hypothetical, lacks foundation. He can answer.
12:15:34 20 THE WITNESS: I think it's important that
12:15:38 21 those things be taken into consideration, yes.
12:15:43 22 MR. KODSI: Q. What about exposure to
12:15:44 23 pollens?
12:15:45 24 A. Yeah.
12:15:46 25 MR. BROOKEY: Same objections.
12:15:47 26 MR. KODSI: Q. And what about -- you talked

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12:15:50 27 yesterday about exposure to cockroach residues. Is that
12:15:56 28 something that the epidemiology studies should look at

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12:16:00 1 as a confounding factor?
12:16:02 2 MR. BROOKEY: Same objections.
12:16:03 3 THE WITNESS: And again, I would think that
12:16:06 4 that would be important. But would it actually be
12:16:09 5 incorporated into the kind of studies that are done
12:16:15 6 already? It's one of those things where I'm not sure --
12:16:24 7 Well, I'll leave it at that.
12:16:26 8 MR. KODSI: Q. Yesterday, we talked about
12:16:28 9 one of the benefits of animal studies being that you
12:16:31 10 have a controlled environment; correct?
12:16:33 11 A. Yes.
12:16:34 12 Q. And one of the problems with the epidemiology
12:16:36 13 studies is that they don't have a controlled
12:16:39 14 environment?
12:16:39 15 A. Yes.
12:16:40 16 Q. And if we talk about something, for example,
12:16:43 17 like cockroach residues, it's possible that people who
12:16:46 18 live in smoking homes may have more cockroach residues
12:16:49 19 than people who don't live in smoking homes; correct?
12:16:52 20 MR. BROOKEY: Objection. Calls for
12:16:53 21 speculation.
12:16:54 22 THE WITNESS: And I'm not sure that that
12:16:56 23 necessarily follows.
12:16:58 24 MR. KODSI: Q. Whether it follows -- I'm
12:16:59 25 just saying that's a possibility?
12:17:01 26 MR. BROOKEY: Same objection.
12:17:05 27 THE WITNESS: I guess the problem I find with
12:17:09 28 that is that people who smoke are not necessarily dirty

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12:17:12 1 people.
12:17:14 2 MR. KODSI: Q. I understand that. But it is
12:17:17 3 an example of a confounding factor that studies should
12:17:21 4 look at if they can?
12:17:22 5 A. Yeah. Sure. That's correct.
12:17:32 6 Q. And as we talked about with some of the
12:17:35 7 respiratory diseases that you're going to testify about,
12:17:52 8 there may be alternative causes that science has not yet
12:17:55 9 identified?
12:17:55 10 A. For the causes of asthma?
12:17:57 11 Q. Yes.
12:17:58 12 A. That's correct.
12:17:58 13 Q. So in conducting an epidemiology study, the
12:18:01 14 people conducting the study would have no way of knowing
12:18:03 15 whether those unidentified causes are more likely or not
12:18:05 16 to exist in smoking homes?
12:18:08 17 A. That's a possibility.
12:18:11 18 Q. Let's talk a little bit about bias.
12:18:15 19 Are you familiar with the concept of bias in
12:18:18 20 an epidemiologic study?
12:18:19 21 A. Yes.
12:18:20 22 Q. What types of biases are there in
12:18:23 23 epidemiologic studies?
12:18:25 24 MR. BROOKEY: I'll object to the extent this
12:18:27 25 covers some of the same ground we discussed yesterday,
12:18:30 26 but he can answer.
12:18:31 27 THE WITNESS: There may be a bias due to the
12:18:44 28 socioeconomic status of an individual possibly.

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12:18:50 1 MR. KODSI: Q. Are you familiar with the
12:18:55 2 type of bias known as smoking status misclassification?

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12:19:00 3 A. No.
12:19:04 4 Q. Are you familiar that some epidemiology
12:19:07 5 studies have shown that people that identify themselves
12:19:11 6 as nonsmokers are really smokers?
12:19:14 7 A. Yes.
12:19:15 8 MR. BROOKEY: Objection, lacks foundation.
12:19:17 9 MR. KODSI: Q. Was that a yes?
12:19:19 10 A. That was a yes.
12:19:20 11 Q. Have you ever heard that referred to as a
12:19:23 12 smoking status misclassification bias?
12:19:25 13 A. Yes.
12:19:26 14 Q. And isn't it possible that in some of the
12:19:29 15 studies that talk about the effects of maternal exposure
12:19:32 16 to ETS, those studies may actually have mothers who are
12:19:39 17 active smokers?
12:19:39 18 MR. BROOKEY: Objection. Calls for
12:19:40 19 speculation.
12:19:41 20 THE WITNESS: That is a possibility.
12:19:42 21 MR. KODSI: Q. Have you reviewed to see
12:19:44 22 whether the studies you've read have accounted for that
12:19:48 23 factor?
12:19:49 24 A. Yes.
12:19:49 25 Q. And have they?
12:19:51 26 A. Yes.
12:19:51 27 Q. In what manner?
12:19:52 28 A. That they classify the children based on the



12:19:59 1 smoking history of their mothers as either being -- as
12:20:05 2 being passively exposed to cigarette smoke or active
12:20:09 3 smokers during pregnancy, and then what did they do
12:20:14 4 after the birth of child. And then they actually
12:20:17 5 analyze those as separate groups of -- the children as
12:20:27 6 different -- falling in different groups.
12:20:31 7 Q. What do those studies do to account for the
12:20:34 8 possibility that mothers that claim to be nonsmokers are
12:20:37 9 truly smokers?
12:20:39 10 A. If -- I think they can only go on what they
12:20:44 11 can get from the questionnaire and on the integrity of
12:20:49 12 the answers that they're given to their questions. So
12:20:54 13 in terms of those types of issues, I personally don't
12:21:03 14 know how big of a problem that is.
12:21:08 15 Q. Are you familiar with the discussion in the
12:21:12 16 1992 E.P.A. report on that issue?
12:21:15 17 A. No.
12:21:22 18 Q. Another type of bias is publication bias.
12:21:26 19 Are you familiar with that term?
12:21:28 20 A. Yes.
12:21:28 21 Q. Could you describe for me what publication
12:21:31 22 bias is?
12:21:36 23 A. If I understand you correctly, this would be
12:21:38 24 the difficulty of publishing negative results. And
12:21:43 25 therefore, what we find in the publications are
12:21:48 26 typically more positive results than negative results.
12:21:52 27 Q. And publication bias in epidemiology means
12:22:00 28 that there may be people who have developed negative



12:22:03 1 results but have been unable to publish them; correct?
12:22:08 2 A. Yes.
12:22:08 3 Q. And there are scientists who develop negative
12:22:11 4 results and choose not to publish them?
12:22:17 5 A. (Witness nods head.)
12:22:18 6 Q. You've had some experience with the
12:22:20 7 American -- was that a yes?

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12:22:22 8 A. Yes.
12:22:23 9 Q. Okay. You've had some experience with the
12:22:25 10 American Thoracic Society in which they refused to
12:22:29 11 publish one of your papers simply because it received
12:22:33 12 tobacco funding; correct?
12:22:35 13 A. Yes.
12:22:35 14 Q. And that's also a form of publication
12:22:38 15 bias; correct?
12:22:39 16 A. Yes.
12:22:40 17 Q. That there are some journals who won't
12:22:43 18 publish results just because of who funds them?
12:22:46 19 A. Yes.
12:22:46 20 Q. And yesterday, we -- let me get the paper
12:22:55 21 out. We talked yesterday about the importance of
12:23:07 22 reproducibility of data in toxicology studies; correct?
12:23:11 23 A. Uh-huh, yes.
12:23:12 24 Q. If scientist conducted a study and found a
12:23:15 25 health effect and then later conducted a similar study
12:23:19 26 and couldn't find a health effect and found that it
12:23:22 27 wasn't reproducible, you would agree that they should
12:23:26 28 publish the subsequent finding; correct?



12:23:27 1 MR. BROOKEY: Objection. Incomplete
12:23:29 2 hypothetical, lacks foundation, calls for speculation.
12:23:33 3 If it's possible to answer, then he may.
12:23:37 4 THE WITNESS: Well, I think for the benefit
12:23:40 5 of the scientific community, as well as for the public,
12:23:45 6 it is helpful to understand all the results of any type
12:23:52 7 of study. I think just because someone may actually
12:23:59 8 find that they have differences in the results from one
12:24:03 9 study to the next does not necessarily invalidate either
12:24:09 10 study, but it helps us to better understand that there
12:24:13 11 are potential variabilities among the population, and we
12:24:20 12 may not always see the effect that we expect or that
12:24:26 13 we -- based on previous studies.
12:24:30 14 MR. KODSI: Let's mark this as Exhibit 536, I
12:24:34 15 believe.
16 (Discussion off the record)
17 (Whereupon, Defendant's Exhibit 537
18 was marked for identification.)
12:25:19 19 MR. KODSI: Q. Dr. Pinkerton, let me show
12:25:20 20 you what's been marked as Exhibit 537. This is a study
12:25:25 21 by Dr. Rajini and others including yourself titled
12:25:31 22 "Decreased Fetal Weights in Rats Exposed to Sidestream
12:25:35 23 Cigarette Smoke"; correct?
12:25:36 24 A. Yes.
12:25:36 25 Q. And yesterday, I think that you indicated
12:25:39 26 that this was the only animal study upon which you are
12:25:43 27 relying for the conclusion that ETS is responsible for
12:25:47 28 decreased fetal weight?



12:25:50 1 A. In animal studies, that is correct.
12:25:55 2 Q. Are you aware of any subsequent efforts by
12:25:58 3 Dr. Witschi to reproduce this data?
12:26:01 4 A. Yes.
12:26:02 5 Q. And could you describe for us what those
12:26:05 6 subsequent efforts were?
12:26:06 7 A. That he has done additional studies looking
12:26:14 8 at fetal weight with exposure -- maternal exposure to
12:26:19 9 environmental tobacco smoke and that at this -- my
12:26:27 10 understanding is that he has not seen the reduction in
12:26:33 11 fetal body weight that he described in this paper.
12:26:39 12 Q. And were you involved with him in those

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12:26:41 13 subsequent efforts as well?
12:26:43 14 A. Only from the perspective of that I am
12:26:47 15 involved with handling all the animal exposures and
12:26:52 16 overseeing the animal inhalation facility.
12:26:56 17 Q. And you're aware that when Dr. Witschi was
12:27:00 18 unable to reproduce the results he reported in Exhibit
12:27:04 19 537, he has not published that fact?
12:27:10 20 MR. BROOKEY: Objection. Lacks foundation,
12:27:12 21 argumentative. He can answer.
12:27:14 22 THE WITNESS: And I'm not aware of that.
12:27:16 23 MR. KODSI: Q. Okay. If he has not
12:27:20 24 published the fact that he was unable to reproduce these
12:27:23 25 results, would you view that as a form of publication
12:27:26 26 bias?
12:27:26 27 MR. BROOKEY: Objection. Lacks foundation,
12:27:29 28 calls for speculation.



12:27:32 1 THE WITNESS: I would question if he is
12:27:41 2 pursuing the studies any further. And if he's no longer
12:27:45 3 pursuing those studies any further, then I would take
12:27:49 4 that to mean that these studies are not necessarily
12:28:00 5 wrong but really should be confirmed again with
12:28:06 6 additional studies.
12:28:07 7 MR. KODSI: Q. And would you expect them to
12:28:09 8 be confirmed again with additional studies before you
12:28:13 9 were comfortable relying on them for opinions you intend
12:28:18 10 to offer in this case?
12:28:19 11 MR. BROOKEY: Same objections.
12:28:20 12 THE WITNESS: The only reason that I'll
12:28:22 13 answer no to that is because of the human
12:28:24 14 epidemiological studies, that those studies I think
12:28:28 15 are -- although they do have -- are fraught with not
12:28:32 16 knowing exactly exposure histories or, you know, whether
12:28:38 17 the woman may have smoked, although she says that she's
12:28:42 18 only been passively -- that she's not smoking, I think
12:28:48 19 those data and those studies are -- there are a number
12:28:55 20 of them that consistently show a reduction in fetal
12:29:01 21 weight. So I would say that this is not contrary to
12:29:08 22 what epidemiological studies have shown based on a
12:29:13 23 number of different investigators.
12:29:28 24 MR. KODSI: Q. But you would agree with me
12:29:30 25 that the Rajini study is the only animal study you rely
12:29:35 26 on for your opinion regarding decreased fetal growth?
12:29:38 27 MR. BROOKEY: Objection. Asked and answered,
12:29:38 28 argumentative.



12:29:42 1 THE WITNESS: Yes.
12:29:57 2 MR. KODSI: Q. Now, another concept in
12:29:59 3 epidemiology is the strength or magnitude of the
12:30:03 4 association. Are you familiar with that concept?
12:30:08 5 A. Yes. The general terms would be something
12:30:12 6 that sounds familiar to me.
12:30:15 7 Q. We've talked about relative risks and odds
12:30:18 8 ratios. Are you familiar with the concept of weak
12:30:22 9 associations?
12:30:23 10 A. Yes.
12:30:24 11 Q. And what's your understanding of that
12:30:27 12 concept?
12:30:28 13 A. My understanding of a weak association is
12:30:31 14 something that shows a consistent pattern but is not
12:30:35 15 statistically significant. Potentially, it might be
12:30:40 16 significant on some occasions but not -- doesn't show a
12:30:44 17 consistent significant pattern.

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12:30:45 18 Q. And is it your understanding that with
12:30:47 19 respect to the epidemiology studies on ETS and children,
12:30:52 20 that that is a weak association?
12:30:54 21 A. No.
12:30:55 22 Q. What is your understanding of that
12:30:56 23 association?
12:30:57 24 A. That there are causal associations associated
12:31:00 25 with exposure to environmental tobacco smoke and
12:31:03 26 children's health.
12:31:04 27 Q. What is your understanding of what the
12:31:07 28 relative risks are reported in the epidemiologic



12:31:11 1 literature?
12:31:12 2 A. The relative risks of exposure to
12:31:15 3 environmental tobacco smoke and children having
12:31:19 4 respiratory symptoms?
12:31:20 5 Q. Yes.
12:31:28 6 A. Well, my understanding is that the relative
12:31:31 7 risk is sufficiently high enough to consider it to be
12:31:35 8 causal.
12:31:36 9 Q. Is it your understanding that the relative
12:31:38 10 risk is above 2.0?
12:31:42 11 A. No.
12:31:43 12 Q. Your understanding is it's between 1.0 and
12:31:47 13 2.0?
12:31:48 14 A. In that range.
12:31:50 15 Q. Is it below or above 1.5?
12:31:54 16 A. My understanding in reviewing the literature
12:31:57 17 is it can be as low as possibly 1.3 and be still
12:32:04 18 significant.
12:32:07 19 Q. Are you familiar with any epidemiology
12:32:11 20 studies on children and respiratory illness that are
12:32:14 21 above 2.0 or they report a relative risk above 2.0?
12:32:20 22 A. Not that I can recall.
12:32:22 23 Q. Do you know who Dr. Ernst Wynder is?
12:32:26 24 A. No.
12:32:28 25 Q. If I indicated that Dr. Wynder was affiliated
12:32:32 26 with the American Health Foundation and did the original
12:32:35 27 mouse skin painting studies of the 1950s, does that
12:32:39 28 bring back who he might be?



12:32:41 1 A. Yes.
12:32:42 2 Q. So that is a name you have heard?
12:32:46 3 A. No. But the studies are.
12:32:50 4 Q. Okay. Have you seen epidemiologic literature
12:32:58 5 that states that relative risks below 2.0 are viewed as
12:33:03 6 weak associations?
12:33:05 7 MR. BROOKEY: Objection. Lacks foundation.
12:33:07 8 He can answer.
12:33:07 9 THE WITNESS: No.
12:33:09 10 MR. KODSI: Q. That's not a concept you're
12:33:11 11 familiar with?
12:33:11 12 A. No.
12:33:14 13 Q. This is a good stopping point for me. I
12:33:18 14 think I can keep it to within an hour after lunch and
12:33:22 15 plus what Pat has.
12:33:24 16 MR. BROOKEY: How much do you think you have,
12:33:26 17 Pat.
12:33:27 18 MR. CAFFERTY: An hour maybe.
12:33:28 19 VIDEO OPERATOR: This marks the end of type
12:33:31 20 No. 5 in the deposition of Kent Pinkerton. The time is
12:33:35 21 12:33.
22 (Noon recess taken from 12:33 to 1:42 p.m.)

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13:42:34 23 VIDEO OPERATOR: Back on the record.
13:42:42 24 Here marks the beginning of tape No. 6 in the
13:42:45 25 deposition of Kent Pinkerton. The time is 1:42.
13:42:49 26 MR. KODSI: Q. Dr. Pinkerton, we've talked
13:42:52 27 about Exhibit 536 that I've just handed you. You
13:42:58 28 recognize that as the deposition notice for this case?



13:43:02 1 A. Yes.
13:43:03 2 Q. And the last page of that exhibit is an
13:43:06 3 Exhibit A that is the list of documents you were
13:43:09 4 requested to bring?
13:43:12 5 A. Yes.
13:43:13 6 Q. If you could look at what's described under
13:43:16 7 No. 4, which is "All writings that you are relying upon
13:43:22 8 for the opinions you intend to offer in this case," I
13:43:26 9 think we've talked about earlier that there are
13:43:29 10 epidemiologic studies that you're intending to rely upon
13:43:33 11 that were not produced in this file?
13:43:35 12 A. Yes.
13:43:35 13 Q. Do you have a list anywhere of what those
13:43:38 14 studies are?
13:43:40 15 A. One good reference for including what
13:43:47 16 epidemiological studies that I would be referring to
13:43:51 17 would be found in the California E.P.A. document on
13:43:56 18 environmental health effects -- on health effects of
13:44:00 19 environmental tobacco smoke.
13:44:03 20 Q. I think you've told me that you haven't
13:44:06 21 reviewed all of the original studies that were cited in
13:44:09 22 the California E.P.A. report.
13:44:10 23 A. That's right.
13:44:11 24 Q. Is there a way we can determine which
13:44:12 25 epidemiologic studies you have read and are relying on
13:44:15 26 for your testimony in this case?
13:44:18 27 A. Well, again, I think any epidemiological
13:44:25 28 studies which we have quoted in papers that I serve as



13:44:28 1 an author or co-author, I think those would be
13:44:32 2 reasonable ones to keep in mind, as well as a number of
13:44:41 3 the epidemiological studies that have been reviewed
13:44:44 4 through the Cal E.P.A. document.
13:44:55 5 Q. You haven't generated -- In other words, you
13:45:00 6 haven't generated any type of bibliography of the
13:45:03 7 studies that you intend to rely upon?
13:45:05 8 A. That is correct.
13:45:05 9 Q. Are there any other studies other than
13:45:08 10 epidemiologic studies that you intend to rely upon for
13:45:11 11 your opinions in this case that are not included in
13:45:14 12 Exhibit 535, which is your file?
13:45:17 13 A. Uh-huh. Well, at this point since I'm
13:45:21 14 continuing to do research in environmental tobacco smoke
13:45:24 15 and health effects on children, I would say that there
13:45:30 16 is always the possibility that as I continue to do that
13:45:33 17 review of the literature, that there may be some paper
13:45:36 18 that would be relevant to the type of testimony of an
13:45:43 19 expert witness that I would give.
13:45:45 20 Q. Are you comfortable that you have as of today
13:45:49 21 reviewed all the studies that you need to review in
13:45:52 22 order to form the opinions you intend to offer at this
13:45:55 23 trial?
13:45:55 24 MR. BROOKEY: Objection. Asked and answered.
13:45:56 25 It calls for speculation. He can answer.
13:45:58 26 THE WITNESS: Again, I think that since
13:46:00 27 there's always additional studies that are going on, and

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13:46:03 28 as I learn more about some of the health effects of

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13:46:07 1 environmental tobacco smoke, that there may be
13:46:12 2 additional papers and research that I would rely on.
13:46:17 3 But I don't think that would change my area that I would
13:46:22 4 be an expert witness in.
13:46:25 5 MR. KODSI: Q. To the extent that you review
13:46:27 6 additional epidemiologic studies and you feel that that
13:46:31 7 changes the opinions that you intend to offer in this
13:46:33 8 case, will you notify Mr. Brookey of that fact?
13:46:37 9 A. Yes.
13:46:37 10 MR. KODSI: And then, Brian, if he notifies
13:46:39 11 you, we would request that we have the right for
13:46:41 12 subsequent deposition if that should happen.
13:46:43 13 MR. BROOKEY: I think sort of a point of
13:46:44 14 clarification in light of the changes that are happening
13:46:47 15 in the case, when he's referring to Mr. Brookey, he's
13:46:51 16 referring to counsel for plaintiffs. And yes, we'll
13:46:54 17 make sure that information is passed along.
13:46:56 18 MR. KODSI: Sure, thank you.
13:46:58 19 Let's mark --
20 (Discussion off the record)
21 (Whereupon, Defendant's Exhibit 538
22 was marked for identification.)
13:47:19 23 MR. KODSI: Q. I've handed you what's been
13:47:21 24 marked as Exhibit 538, Dr. Pinkerton, and that is a copy
13:47:25 25 of your declaration in this case. If you would turn to
13:47:33 26 page 4 -- I'm sorry, page 3, and you notice there's some
13:47:41 27 language circled on that page?
13:47:43 28 A. Yes.

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13:47:44 1 Q. Is this a document that you have seen before?
13:47:54 2 A. This is -- My impression is that this is the
13:47:57 3 document that Mr. McGuire had last week.
13:48:02 4 Q. When you say last week, he had a copy of your
13:48:06 5 declaration that he went over with you last week?
13:48:08 6 A. Yes.
13:48:08 7 Q. He didn't leave a copy with you?
13:48:11 8 A. Not with circles.
13:48:12 9 Q. Okay. And so is it your recollection that
13:48:15 10 those circles are the ones that Mr. McGuire went over
13:48:19 11 with you?
13:48:19 12 A. He didn't go over all of them, but he went
13:48:23 13 over some of them.
13:48:24 14 Q. Do you remember which ones he went over with
13:48:26 15 you?
13:48:31 16 A. Page 3.
13:48:38 17 Q. You're on page 3? Why don't you identify by
13:48:43 18 the line number what he went over with you.
13:48:46 19 A. Line 16, line 17, line 18, line 23, line 24.
13:48:57 20 Q. And what did you discuss about those lines?
13:49:00 21 A. The discussions centered around the meaning
13:49:04 22 of these words that are circled from the context of how
13:49:11 23 I used them in a scientific manner and how these words
13:49:16 24 are used in legal terms.
13:49:20 25 Q. Why don't we start by the word "strongly
13:49:24 26 suggest," which is circled on line 16. What is it you
13:49:28 27 discussed about the phrase "strongly suggest"?
13:49:35 28 A. Whether this is cause or simply a possibility

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13:49:45 1 of epidemiological studies suggesting ETS leads to a
13:49:50 2 litany of health effects.
13:49:53 3 Q. And how did you explain what that language

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13:49:55 4 means to Mr. McGuire?
13:49:57 5 A. He explained -- He told me that causality is
13:50:02 6 based on it being more than 51 percent happening versus
13:50:11 7 where we may use 95 percent as our confidence level.
13:50:16 8 And so he simply pointed out to me that if
13:50:23 9 epidemiological studies show a causality for ETS health
13:50:29 10 effects, that that would be the terms that I should
13:50:35 11 state them in.
13:50:37 12 Q. But as a scientist, those would not be the
13:50:41 13 terms you would use; correct?
13:50:43 14 A. The terms that I have used in my declaration
13:50:47 15 would be the terms I would use in a scientific journal.
13:50:52 16 Q. And you would agree that if you saw an
13:50:54 17 epidemiologic study that used a 51 percent confidence
13:51:00 18 interval, you wouldn't put a lot of weight into that
13:51:03 19 study?
13:51:04 20 MR. BROOKEY: Objection. Lack of foundation,
13:51:06 21 incomplete hypothetical. But he can answer.
13:51:08 22 THE WITNESS: I don't think that's relevant
13:51:09 23 to scientific criteria, that basically legal
13:51:18 24 designations for the meanings of words versus the
13:51:22 25 designation that we give to them in science are totally
13:51:26 26 different.
13:51:26 27 MR. KODSI: Q. Prior to meeting with
13:51:28 28 Mr. McGuire, did you have any understanding of how legal



13:51:32 1 definitions of words were used?
13:51:35 2 MR. BROOKEY: Objection. It's overly broad.
13:51:38 3 But he can answer.
13:51:39 4 THE WITNESS: Based on the words that he
13:51:42 5 circled, no.
13:51:46 6 MR. KODSI: Q. What is the next phrase that
13:51:48 7 he circles?
13:51:49 8 A. Line 17, "becoming apparent."
13:51:52 9 Q. And how do you interpret the phase "becoming
13:51:56 10 apparent"?
13:51:58 11 MR. BROOKEY: That's A-P-P-A-R-E-N-T.
13:52:02 12 MR. KODSI: Q. "Apparent" being one word as
13:52:05 13 opposed to two.
13:52:06 14 MR. BROOKEY: We want to keep this a G rated
13:52:08 15 deposition.
13:52:17 16 THE WITNESS: My interpretation of using the
13:52:21 17 terminology "becoming apparent" is based on the fact
13:52:26 18 that more and more published research in peer-reviewed
13:52:32 19 journals point out that susceptibility to the effects of
13:52:37 20 ETS are dependent upon the factors that I mention in the
13:52:42 21 latter portion of that sentence, duration of exposure,
13:52:46 22 concentration of materials, age when exposure occurs.
13:52:53 23 MR. KODSI: Q. And I didn't ask you this
13:52:55 24 before, but each of the circles has a little number on
13:52:59 25 the right-hand side of the top of the circle. What do
13:53:03 26 those numbers reference, if you know?
13:53:08 27 A. I'm not sure. He told me that there were
13:53:14 28 27-odd terms that -- or 27 terms throughout the



13:53:18 1 declaration that he had questions about, and I don't
13:53:21 2 know if that's the numbering that he gave to them.
13:53:25 3 Q. Did he walk through any other phrase with you
13:53:29 4 other than the ones you've identified on page 3?
13:53:31 5 A. He walked through line 23, "growing evidence
13:53:37 6 suggests," and line 24, "can also."
13:53:41 7 Q. What about on pages other than page 3?
13:53:43 8 A. No.

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13:53:45 9 Q. So your review of that declaration with
13:53:48 10 Mr. McGuire was limited to what we talked about on page
13:53:51 11 3?
13:53:52 12 A. Yes. There is a possibility that he turned
13:53:55 13 the page to page 4 and line 2, "increasing concern"
13:54:01 14 circled and identified as No. 5. He may have discussed
13:54:06 15 that one, but I don't recall.
13:54:26 16 Q. Dr. Pinkerton, who do you recognize as the
13:54:30 17 leading experts in studying respiratory effects on
13:54:34 18 children?
13:54:36 19 MR. BROOKEY: Objection to the extent it
13:54:38 20 calls for a legal conclusion. But he can answer.
13:54:42 21 THE WITNESS: I think that there are a number
13:54:46 22 of individuals, and I think it depends upon what issues
13:54:56 23 that one is discussing when it comes to children's
13:54:58 24 health. If we're talking about children's health and
13:55:02 25 effects of environmental tobacco smoke, people who do
13:55:09 26 studies and who I think have quite a bit of information
13:55:15 27 about the health effects would be some of those that we
13:55:19 28 quoted in our studies. Cunningham is one example and



13:55:25 1 colleagues. Another person here in the State of
13:55:31 2 California who has done a number of studies with
13:55:34 3 children's health effects with environmental tobacco
13:55:37 4 smoke exposure is Ira Tager.
13:55:40 5 MR. KODSI: Q. Is that T-A-G-E-R?
13:55:43 6 A. That's correct. He's at the School of Public
13:55:46 7 Health at U.C. Berkeley.
13:55:49 8 Q. Are you familiar with a Dr. Fernando
13:55:52 9 Martinez?
13:55:52 10 A. No.
13:55:54 11 Q. If I told he was the director of Respiratory
13:55:58 12 Sciences Center at the University of Arizona, would that
13:56:01 13 be a name you're familiar with?
13:56:03 14 A. No.
13:56:06 15 Q. Is there anyone else other than Cunningham
13:56:09 16 and Tager?
13:56:13 17 A. Well, again, a number of the studies, the
13:56:18 18 epidemiological studies, that have shown health effects
13:56:23 19 or have examined children's health and respiratory
13:56:27 20 symptoms with ETS exposure are probably important.
13:56:31 21 The ones that I can remember at the moment
13:56:34 22 are Weiss, W-E-I-S-S, who looked at respiratory
13:56:43 23 symptoms.
13:56:44 24 There's a slide that I use -- actually, it's
13:56:49 25 two slides that list a number of respiratory symptoms
13:56:52 26 and the investigators, the first author, that I have
13:56:57 27 used oftentimes in discussing respiratory symptoms with
13:57:03 28 environmental tobacco smoke exposures in children. But



13:57:09 1 I don't remember them other than -- actually, I really
13:57:15 2 don't remember their names.
13:57:25 3 MR. KODSI: I think that's all I have. I'm
13:57:28 4 going to go through my notes, and it would be ten more
13:57:31 5 questions if I have any more after that. I just note
13:57:33 6 Mr. Cafferty -- actually, since we've had Dr. Carrick,
13:57:36 7 we have Dr. Cafferty.
13:57:40 8 Dr. Pinkerton, thank you very much for your
13:57:43 9 time. I appreciate it.
13:57:44 10 THE WITNESS: Thank you.
13:58:08 11 EXAMINATION BY MR. CAFFERTY
13:58:08 12 MR. CAFFERTY: Q. Dr. Pinkerton, let me
13:58:10 13 reintroduce myself to you. I'm Pat Cafferty. I

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13:58:13 14 represent Philip Morris in this case. We met yesterday
13:58:16 15 morning.
13:58:16 16 I have a couple of questions that I want to
13:58:19 17 ask you in follow-up to what Mr. Kodsi asked you, in
13:58:22 18 part so that I can get a better understanding and so
13:58:25 19 that the court can get a better understanding as to just
13:58:28 20 what these animal studies are that you did and how they
13:58:30 21 might be relevant to the opinions that you're going to
13:58:33 22 express in this case.
13:58:34 23 But let me begin by talking about Exhibit
13:58:37 24 538, which is what Mr. Kodsi was just asking you about,
13:58:41 25 and direct your attention back to page 3 of that exhibit
13:58:44 26 again. You indicated that Mr. McGuire discussed with
13:58:52 27 you the phrase "growing evidence suggests." What did
13:58:56 28 you discuss with Mr. McGuire about that phrase?



13:59:01 1 A. He asked me what I meant when I wrote that
13:59:07 2 phrase and asked if changing that phrase in terms of
13:59:30 3 legal terms that would be better understood by the
13:59:43 4 code -- by the court would change the meaning that I
13:59:45 5 meant for it to be.
13:59:46 6 For example, I don't recall specifically, but
13:59:47 7 he may have -- he perhaps on this one asked me if I
13:59:50 8 crossed out the term "growing" and just said -- if the
13:59:52 9 sentence stated, "Evidence suggests that many of these
13:59:54 10 same disease processes," would that change the meaning
13:59:56 11 of it. And I told him no.
13:59:59 12 Q. What did you tell him you meant by
14:00:00 13 growing-evidence-suggests?
14:00:02 14 A. This is a reflection that there are more and
14:00:05 15 more studies on environmental tobacco smoke that -- and
14:00:09 16 actually, I'm referring to the last 15 to perhaps 20
14:00:15 17 years of studies that specifically look at children and
14:00:20 18 environmental tobacco smoke, and that there -- with the
14:00:25 19 additional numbers of studies that are -- that have been
14:00:29 20 done over this period of time, that there are more and
14:00:33 21 more studies that show that there are health effects
14:00:37 22 associated with passive smoke exposure.
14:00:42 23 Q. Did Mr. McGuire suggest any alternative
14:00:46 24 formulation for how you should express your opinion
14:00:49 25 that's set forth in that paragraph of your declaration?
14:00:54 26 A. Only in the context of helping me to better
14:00:58 27 understand what is causality versus suggestive of for
14:01:06 28 health effects associated with environmental tobacco



14:01:08 1 smoke.
14:01:08 2 Q. What specifically did he suggest to you?
14:01:12 3 A. That if there is evidence that would suggest
14:01:19 4 that there is a cause for some exposure leading to a
14:01:26 5 specific health endpoint, that I should state it as such
14:01:31 6 and not as being suggestive or -- because it's not based
14:01:40 7 on absolute certainty.
14:01:44 8 Q. Using that formulation, how would you express
14:01:47 9 your opinion today in words other than "growing evidence
14:01:51 10 suggests"?
14:01:52 11 A. Well, for this sentence, I would simply state
14:01:56 12 it this way: "Evidence suggests that many of these same
14:02:00 13 disease processes also occur through passive exposure to
14:02:05 14 cigarette smoke."
14:02:06 15 Q. Okay. Now, there's also the phrase "can also
14:02:10 16 occur" that you mentioned you discussed with
14:02:12 17 Mr. McGuire. What did you discuss about that phrase?
14:02:17 18 A. As I just stated, the way I would reword this

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14:02:22 19 sentence would be to delete the word "can," and it would
14:02:30 20 read, "Evidence suggests that many of these same disease
14:02:34 21 processes also occur through passive exposure to
14:02:37 22 cigarette smoke."
14:02:40 23 Q. Are there other places in your declaration
14:02:43 24 where you would state your opinion in different terms
14:02:47 25 than the way in which you wrote it in the declaration,
14:02:50 26 Exhibit 538?
14:02:52 27 A. Only if it would help to clarify what I mean
14:02:56 28 in terms of what I've written for the declaration.



14:03:01 1 Q. Let's take them one at a time and page by
14:03:05 2 page, and tell me which of your opinions you'd state in
14:03:08 3 different terms than the way in which you stated them in
14:03:11 4 your declaration.
14:03:12 5 A. Okay. For the item No. 1, circled as
14:03:18 6 "strongly suggests," since this is a sentence that talks
14:03:22 7 about epidemiological studies leading to a litany of
14:03:27 8 health effects, I would just simply state it as such as
14:03:30 9 a fact, that "Epidemiology studies of exposure to ETS
14:03:40 10 shows that this leads to a litany of health effects." I
14:03:44 11 wouldn't say "strongly suggests." I would just make it
14:03:48 12 as a fact.
14:03:49 13 Q. Why would you change it in that way?
14:03:51 14 A. Because of the consistency in numerous
14:03:57 15 epidemiological studies that show that there are health
14:04:01 16 effects associated with exposure to environmental
14:04:04 17 tobacco smoke, particularly in children.
14:04:07 18 Q. Was your opinion inaccurate as stated
14:04:10 19 previously?
14:04:11 20 A. No, because as a scientist, when I say
14:04:14 21 "strongly suggests," other scientists would know I meant
14:04:18 22 that that was a positive association, that I'm stating
14:04:24 23 that epidemiological studies are -- and those results or
14:04:29 24 observations made there are indicative of the fact that
14:04:33 25 there are health effects associated with environmental
14:04:35 26 tobacco smoke.
14:04:38 27 Q. Does "strongly suggest" mean that there's a
14:04:41 28 positive association but not a conclusive association?



14:04:47 1 A. "Strongly," I think, in my opinion gives it
14:04:53 2 more than just the thought that there may be a positive
14:05:01 3 association. Nothing can be absolute, but I think that
14:05:09 4 the studies would suggest that there is clearly an
14:05:15 5 association that we can say is causative.
14:05:18 6 Q. What's the next part of your declaration that
14:05:22 7 you would change?
14:05:25 8 A. Are we referring to everything that he's
14:05:28 9 circled?
14:05:28 10 Q. Yes. And if there's something that isn't
14:05:30 11 circled but you want to change it, I want to know about
14:05:34 12 that as well.
14:05:34 13 A. Okay, okay. Actually, before meeting with
14:05:37 14 Mr. McGuire, from my perspective of understanding the
14:05:41 15 science and the way I write things, I felt very content
14:05:47 16 with what I had, but that was based on my understanding
14:05:52 17 as a scientist and the use of these terms.
14:05:56 18 So if it's not circled, I wouldn't change it
14:05:59 19 because I'm assuming that based on Mr. McGuire's
14:06:04 20 understanding of the legal implications of the
14:06:06 21 declaration, that everything else is clear to anyone who
14:06:13 22 reads it.
14:06:15 23 Q. Then let's go to the next circled part that

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14:06:18 24 we haven't already discussed, and tell me how you would
14:06:22 25 change it and why you would change it.
14:06:25 26 Okay. For No. 2, the circled phrase is
14:06:29 27 "becoming apparent." I would simply say "apparent."
14:06:35 28 For 2A --



14:06:35 1 Q. Why would you make that change?
14:06:42 2 A. Again, because this was based upon the fact
14:06:46 3 that we know that susceptibility to environmental
14:06:50 4 tobacco smoke would be dependent upon the factors that
14:06:55 5 are listed at the end of the sentence: duration of
14:06:58 6 exposure, concentration of during exposure and the age
14:07:06 7 of the individual who is being exposed to environmental
14:07:10 8 tobacco smoke.
14:07:12 9 Q. What's the next circled phrase that you would
14:07:15 10 change?
14:07:19 11 A. 2A, "may be."
14:07:20 12 Q. That's on which line?
14:07:22 13 A. Line 18.
14:07:24 14 And then he has immediately after that
14:07:28 15 "highly dependent," also on line 18.
14:07:38 16 Q. What change would you make there?
14:07:40 17 A. I think I would only make the change in 2A.
14:07:45 18 And rather than saying "may be," I would just simply
14:07:48 19 state, "that susceptibility to the effects of ETS are
14:07:52 20 highly dependent."
14:07:54 21 Q. Why would you make that change?
14:07:57 22 A. Because I think that there is sufficient
14:08:01 23 evidence from epidemiological studies looking at
14:08:07 24 children versus adults on health effects as well as in
14:08:15 25 other studies that adds validity to the fact that all of
14:08:22 26 these parameters that are listed, such as duration of
14:08:25 27 exposure, concentration and critical windows of
14:08:30 28 exposure: during lung development, during perinatal



14:08:35 1 development, are all important in making -- well, in
14:08:44 2 demonstrating that individuals have greater
14:08:47 3 susceptibility to ETS based on those factors.
14:08:51 4 Q. Which is the change that you wouldn't make
14:08:54 5 that was suggested by Mr. McGuire?
14:08:58 6 A. "Highly dependent." I don't know. Maybe
14:09:04 7 that's too strong of a term. If saying "highly
14:09:08 8 dependent" is too strong of a term, then I would just
14:09:13 9 say "dependent."
14:09:17 10 Q. What was the point that Mr. McGuire was
14:09:20 11 making about "highly dependent"?
14:09:21 12 A. I do not recall. So I'm making this totally
14:09:29 13 on my feelings.
14:09:33 14 Q. I think we discussed the next two circled
14:09:37 15 terms on page 3. Where is the next circled term that
14:09:42 16 you would consider making a change?
14:09:50 17 A. This is page 4, line 2. Mr. McGuire has
14:09:53 18 circled the phrase "increasing concern" from the
14:09:58 19 sentence, "There is increasing concern that specific
14:10:01 20 target populations are present in which effects of
14:10:04 21 exposure to ETS are more severe compared to the general
14:10:08 22 population."
14:10:12 23 Q. Is that something that you would make a
14:10:15 24 change in?
14:10:16 25 A. That seems to be fair as written.
14:10:19 26 Q. Is that a specific term that you discussed
14:10:21 27 with Mr. McGuire?
14:10:22 28 A. No.

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14:10:24 1 Q. What's the next circled term that you would
14:10:29 2 consider making a change in?
14:10:31 3 A. I would like to say that this is the first
14:10:35 4 time I'm seeing these circles at this point. I've never
14:10:37 5 seen this until today. So I would need to look at each
14:10:45 6 one of them and make a decision based on what I've been
14:10:50 7 told about legal terms versus scientific terms and make
14:10:54 8 them just on the spot here today.
14:10:59 9 Page 6, line 16, the phrase is "may be," and
14:11:06 10 this is from the sentence, "Part of this fluctuation may
14:11:09 11 be due to two causes: one, relative changes in
14:11:13 12 temperature humidity, and two, off gassing of nicotine
14:11:18 13 from surfaces over time."
14:11:22 14 We know that relative changes in temperature
14:11:26 15 humidity seem to correlate very strongly with our
14:11:30 16 fluctuations in nicotine within our chamber
14:11:33 17 concentration. And I think that I would simply state --
14:11:44 18 actually, I'm not sure it really needs to be changed. I
14:11:48 19 think that from my perspective, that's probably the most
14:11:54 20 probable cause because there are so many data points
14:11:58 21 that were taken. We measured nicotine every day over
14:12:03 22 months of a period of time when we were seeing
14:12:06 23 temperature and relative humidity change. So I would
14:12:10 24 basically say that that's probably the cause, but we --
14:12:15 25 the off gassing of nicotine from surfaces over time is
14:12:20 26 simply a concept that I -- that was discussed with me as
14:12:27 27 we worked with Dr. Jenkins in establishing our smoke
14:12:31 28 exposure system at the University of California at



14:12:33 1 Davis.
14:12:35 2 So if we wanted to change it, we could say,
14:12:39 3 "Part of this fluctuation is likely to be due to two
14:12:45 4 causes," but I'm not sure that really changes anything.
14:12:48 5 Q. What I wanted to know is would you make a
14:12:51 6 change in that, or would you just leave it the way it
14:12:53 7 is? And what I understood is you would just leave that
14:12:58 8 one the way it is?
14:13:05 9 A. I would think that would be reasonable.
14:13:07 10 Q. Let's talk about the next circled change,
14:13:09 11 which is on what, line 18?
14:13:10 12 A. Line 18, the phrase "may result." The
14:13:12 13 sentence reads, "In experimental conditions, this may
14:13:14 14 result in higher than normal ratios of nicotine to total
14:13:17 15 suspended particulate matter." I would leave it as is.
14:13:21 16 Q. The next one is on line --
14:13:23 17 A. Line 23, page 6, the term -- the word is
14:13:28 18 "may." The sentence reads -- and actually, there are
14:13:33 19 two instances in this sentence where in each instance
14:13:39 20 "may" has been circled.
14:13:41 21 The sentence reads, "Exposure to ETS may not
14:13:44 22 be the same for all individuals; sensitive populations
14:13:49 23 of individuals may have a more adverse response to the
14:13:53 24 effects of exposure."
14:14:02 25 And again, I see these as not being that
14:14:09 26 ambiguous. I would say that we could for the first
14:14:13 27 sentence -- for the first portion of that sentence,
14:14:17 28 "Exposure to ETS is not the same for all individuals"



14:14:21 1 would be a fair statement. But again, I'm not sure that
14:14:26 2 it really makes a difference one way or the other.
14:14:28 3 "Sensitive populations of individuals may
14:14:31 4 have a more adverse response to the effects of

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14:14:37 5 exposure." I think this is -- well, from the
14:14:44 6 perspective that if we're going to be talking about
14:14:48 7 children as a sensitive population, I think we have
14:14:53 8 already established that they do have a more adverse
14:14:56 9 response to the effects of exposure.
14:14:59 10 So if the way I've written the English that
14:15:07 11 it's -- it needs to be understood that I'm referring to
14:15:11 12 that, then I would change it as "sensitive
14:15:16 13 populations" --- but I would actually change it.
14 (Reporter interrupted)
14:15:19 15 THE WITNESS: -- "of individuals." I would
14:15:22 16 simply say that if we're referring to children, then
14:15:27 17 it's not a maybe; it is true, that they do have a more
14:15:33 18 adverse response to the effects of exposure.
14:15:36 19 MR. CAFFERTY: Q. What's the next circled
14:15:38 20 phrase or word in your declaration?
14:15:41 21 A. Page 8, line 8, the phrase "could be." The
14:15:48 22 sentence reads, "This study addresses whether sidestream
14:15:52 23 smoke, at a concentration that could be encountered
14:15:58 24 indoors, affects the non-ciliated bronchiolar epithelial
14:16:01 25 Clara cell, a lung cell type that differentiates
14:16:04 26 postnatally and is a primary target for inhaled
14:16:08 27 pulmonary toxicants."
14:16:12 28 I don't think I would change this because



14:16:14 1 this is in reference to the fact that we use a
14:16:19 2 particulate concentration of 1 milligram per cubic
14:16:22 3 meter, which is high relative to what would be measured
14:16:32 4 under normal conditions. But it -- but from the
14:16:39 5 perspective that -- Well, I guess this is the one thing
14:16:44 6 that I have difficulty with, with field studies and with
14:16:47 7 measurements of ETS concentrations within different
14:16:51 8 buildings or residences, is the fact that it's -- the
14:16:55 9 average ETS concentration is just that, it's the average
14:16:59 10 concentration over a period of time, and yet it really
14:17:04 11 fails to take into account that there are going to be
14:17:07 12 peaks and valleys in terms of the actual, the real
14:17:12 13 concentrations of total suspended particulate due to
14:17:19 14 someone smoking cigarettes in a room.
14:17:23 15 And so I think that 1 milligram per cubic
14:17:26 16 meter is a concentration that actually we are exposed
14:17:30 17 to, perhaps not over a long period of time, but it's
14:17:35 18 realistic. So in this particular instance, I don't
14:17:39 19 think I would change the phrase.
14:17:42 20 Q. You'd leave it as "could be"?
14:17:44 21 A. "Could be."
14:17:45 22 Q. You mentioned that 1 milligram per cubic
14:17:49 23 meter is high. High in relation to what?
14:17:53 24 A. To measurements of what are the
14:17:56 25 concentrations of environmental tobacco smoke that are
14:18:00 26 given as an average over a period of time.
14:18:03 27 Q. And how do those concentrations that are
14:18:06 28 measured compare to the 1 milligram per cubic meter



14:18:10 1 level that you used in your studies?
14:18:13 2 A. As we've discussed, concentrations of
14:18:16 3 environmental tobacco smoke, the average concentrations
14:18:21 4 are typically at a lower level, probably in the 20 to
14:18:27 5 150 microgram per cubic meter range. So it would be
14:18:36 6 approximately anywhere from a 10- to 20-fold greater
14:18:43 7 concentration, 1 milligram per cubic meter.
14:18:46 8 But again, I would emphasize the fact that as
14:18:50 9 someone is smoking, and depending upon your -- how close

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14:18:58 10 you are to that individual, you're going to have
14:19:01 11 different concentrations of the particulate matter.
14:19:03 12 So again, even though we've opted to use 1
14:19:09 13 milligram per cubic meter concentration as a consistent
14:19:13 14 concentration just so that we can actually look at that
14:19:17 15 and say, "Okay, you know, we're maintaining these things
14:19:20 16 constant; we have no other confounding factors," that
14:19:24 17 those -- that is still a concentration of particulate
14:19:46 18 matter that is within the range of what people can be
14:19:48 19 exposed to, if not, you know, for a long period of time,
14:19:51 20 at least intermittently they will be exposed to
14:19:54 21 concentrations that could be at that level or even well
14:19:57 22 above that level.
14:19:58 23 Q. What's the basis for your conclusion that
14:20:00 24 people are exposed at the 20 microgram to 150 microgram
14:20:04 25 per cubic meter level?
14:20:04 26 A. This is based on field studies that have been
14:20:07 27 conducted by a number of scientists who have actually
14:20:10 28 measured TSP concentrations in different locations, in



14:20:14 1 different cities, in different types of buildings.
14:20:17 2 Q. Which specific studies support that
14:20:20 3 conclusion?
14:20:22 4 A. I think that there are a number. I think
14:20:27 5 there are studies that have been reported in the
14:20:31 6 literature and also in the U.S. Surgeon General's report
14:20:36 7 about concentrations. These are also studies that
14:20:44 8 scientists such as Mike Garin (phon. sp.) and Roger
14:20:48 9 Jenkins would have conducted talking about exposure
14:20:53 10 levels.
14:20:54 11 Q. What are the exposure levels that people in
14:20:58 12 California today encounter in residential environments?
14:21:04 13 A. Again, I think that is totally dependent upon
14:21:09 14 whether -- obviously, whether someone is smoking or not,
14:21:13 15 how much are they smoking, what is the ventilation in
14:21:17 16 the room, what is the size of the room, how many people
14:21:22 17 are actually smoking. In terms of what the actual
14:21:28 18 concentrations are, I think they vary tremendously just
14:21:34 19 as a function of who is in the room and what type of
14:21:40 20 activities are going on.
14:21:41 21 Q. What do you know about smokers' behaviors in
14:21:44 22 California today, about whether they smoke inside or
14:21:47 23 outside, whether they smoke in the presence of others or
14:21:51 24 don't smoke in the presence of others? Do you know
14:21:53 25 anything about that?
14:21:54 26 A. From a scientific survey perspective, I don't
14:22:01 27 know.
14:22:03 28 Q. How about from any perspective?



14:22:09 1 A. I live in Davis, which has one of the
14:22:14 2 strictest ordinances for smoking probably in the
14:22:21 3 country. If you think the State of California is tough,
14:22:24 4 Davis is a leap ahead, where I think the behavior of
14:22:32 5 smoking in Davis is probably not typical for the rest of
14:22:36 6 the state. You cannot smoke even outside of a building
14:22:44 7 in Davis if you're within 20 feet of the entrance of a
14:22:48 8 building. And perhaps the only way, if you wish to
14:22:52 9 smoke in Davis, is to never stand still but to walk, and
14:22:57 10 therefore, then you won't take the risk of being cited
14:23:02 11 for violating a city ordinance of no smoking near a
14:23:10 12 building, because there are plenty of entrances no
14:23:13 13 matter where you walk around Davis.
14:23:16 14 So I don't really know if my experience in

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14:23:23 15 Davis would be typical, but there's no smoking in a
14:23:27 16 building on the University of California-Davis campus;
14:23:34 17 there is no smoking in public buildings. And the only
14:23:39 18 smoking that occurs in Davis are those few individuals
14:23:43 19 who wish to smoke but also walk while they're smoking.
14:23:51 20 So --
14:23:52 21 MR. BROOKEY: They could probably use the
14:23:54 22 aerobic activity.
14:23:58 23 MR. CAFFERTY: Q. Understanding that there's
14:23:59 24 some variability in the levels of exposure that might
14:24:03 25 occur in a California residence, what understanding, if
14:24:07 26 any, do you have about what the range of exposures to
14:24:11 27 ETS would be in California residences today?
14:24:18 28 A. Well, my understanding would be that here in



14:24:21 1 California, since one of the few places there are no
14:24:26 2 regulations for smoking, that is, in residences, that's
14:24:34 3 up to the discretion of people who live there, who if
14:24:41 4 they wished to smoke, then that is completely up to
14:24:45 5 them. And I would think that people who engage in the
14:24:51 6 practices of smoking in their homes could have ETS
14:24:55 7 concentrations that could range anywhere from very low
14:24:59 8 levels depending upon their activity, their behavior in
14:25:04 9 smoking, to extremely high levels that would be as high
14:25:11 10 as any measurements made for indoor ETS concentrations
14:25:22 11 around the world.
14:25:24 12 Q. Are you aware of any data from California
14:25:27 13 residences that would support your conclusions or your
14:25:30 14 understanding?
14:25:33 15 A. No.
14:25:33 16 Q. Let's go to the next circled word or phrase
14:25:40 17 in your declaration.
14:25:42 18 A. Page 9, line 6, the word is "suggesting."
14:25:48 19 And the sentence reads, "We found that exposure to ADSS
14:25:52 20 from birth resulted in a significant thinning of
14:25:56 21 alveolar septal walls, suggesting an acceleration of the
14:26:00 22 maturation of the lung during early postnatal" --
14:26:04 23 "during the early postnatal period."
14:26:13 24 A hallmark for maturation of the gas exchange
14:26:18 25 regions of the lung is indeed thinning of alveolar
14:26:24 26 septal walls. And so if we use that as a criteria for
14:26:37 27 maturation of the lungs, I guess we could change that,
14:26:43 28 but I wouldn't necessarily change that word.



14:26:47 1 Q. So that's another word that you wouldn't
14:26:49 2 change in your declaration; is that correct?
14:26:52 3 MR. BROOKEY: Objection. Misstates the
14:26:53 4 testimony, asked and answered. He can answer it again.
14:26:56 5 THE WITNESS: Would you ask the question
14:26:57 6 again?
14:26:58 7 MR. CAFFERTY: Could you read it back,
14:26:59 8 please?
14:27:00 9 MR. BROOKEY: You might want to read the
14:27:03 10 prior question and answer, too, if you wouldn't mind.
11 (Record read by the reporter)
14:28:14 12 THE WITNESS: And my answer is that I
14:28:17 13 wouldn't necessarily change this word in my declaration.
14:28:21 14 MR. CAFFERTY: Q. What is the next word that
14:28:23 15 is circled in your declaration?
14:28:28 16 A. Page 11, line 8, the word is "suggesting."
14:28:34 17 The sentence reads, "We found that this induction was
14:28:39 18 strongly correlated with exposure to tobacco smoke and
14:28:42 19 that that induction could be removed by the removal of

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14:28:46 20 the particulate phase of from the sidestream cigarette
14:28:52 21 smoke suggesting that the dose factors that are
14:28:55 22 responsible for the induction of this isozyme are
14:28:59 23 predominately found within the particulate fraction of
14:29:02 24 sidestream cigarette smoke."
14:29:07 25 Q. Is that a word that you would change in your
14:29:10 26 declaration?
14:29:13 27 A. From a scientific perspective, I wouldn't see
14:29:17 28 a need for that, but it is clear that if you remove the



14:29:24 1 particulate phase from the sidestream cigarette smoke
14:29:31 2 from these studies, that the induction of this isozyme
14:29:40 3 is found within the particulate fraction.
14:29:52 4 Q. Based on that, would you change the word
14:29:54 5 "suggesting" on line 8 of page 11?
14:29:58 6 A. I think not because we've done recent studies
14:30:03 7 to suggest that reactive oxygen species, reactive oxygen
14:30:13 8 radicals may also induce this isozyme that I'm referring
14:30:17 9 to. And the reactive oxygen species are not necessarily
14:30:23 10 associated with the particulate fraction. But in this
14:30:27 11 particular study, if we remove that, we didn't see that
14:30:31 12 going on. But again, I wouldn't necessarily change it.
14:30:36 13 Q. Okay. What's the next word that is circled
14:30:39 14 in your declaration?
14:30:41 15 A. Page 12, line 6, the word "hypothesize."
14:30:46 16 Q. Would you change that word on line 6, the
14:30:49 17 word "hypothesize" on line 6?
14:30:51 18 A. The sentence reads, "We hypothesize that
14:30:54 19 these changes are due to ADSS exposure during critical
14:30:58 20 windows of lung growth and development that include both
14:31:02 21 fetal and early postnatal periods of life."
14:31:06 22 I would change that -- yes. The way I would
14:31:16 23 change it is "We conclude that these changes are due
14:31:25 24 to."
14:31:26 25 Q. Why would you make that change?
14:31:28 26 A. Under the conditions that we used for looking
14:31:33 27 at these different windows of exposure during lung
14:31:38 28 development, we found that the timing of exposure to



14:31:52 1 ADSS did affect both the growth and the development of
14:31:58 2 the lung both in fetal and postnatal periods of life.
14:32:09 3 So I would just make it stronger.
14:32:12 4 Again, from my perspective of writing
14:32:16 5 something like this as a scientist, the use of the word
14:32:20 6 "hypothesize" is not proof, but certainly it -- until
14:32:25 7 it's disproved, it still would stand as being correct,
14:32:34 8 so -- but if, again -- I'm speaking from just the
14:32:39 9 perspective of this -- would help to clarify what I'm
14:32:42 10 trying to state in my declaration to change that to
14:32:45 11 "conclude" rather than "hypothesize," I would have no
14:32:48 12 problems doing that.
14:32:50 13 Q. Are there any other words that are circled in
14:32:52 14 your declaration?
14:32:56 15 A. Yes.
14:32:57 16 Q. Where is the next one that's circled?
14:33:00 17 A. Page 16, line 26 and 27. The phrase is "has
14:33:07 18 the potential." The sentence reads, "Exposure to a
14:33:12 19 variety of toxicants and/or conditions during lung
14:33:15 20 development has the potential to significantly alter the
14:33:18 21 overall growth and function of the respiratory system."
14:33:22 22 Q. Is it "alter" or "affect"?
14:33:24 23 A. I'm sorry. -- "to significantly affect the
14:33:28 24 overall growth and function of the respiratory system."

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14:33:32 25 Q. Would you change that phrase "has the
14:33:34 26 potential"?
14:33:34 27 A. No.
14:33:38 28 Q. What's the next word that's circled in your



14:33:42 1 declaration?
14:33:42 2 A. Page 17, line 5. The term is "may." The
14:33:48 3 sentence reads, "In contrast, exposure to environmental
14:33:51 4 toxicants such as secondhand cigarette smoke may
14:33:53 5 actually accelerate the maturation of specific cell
14:33:56 6 types in the fetal lung." I would go ahead, again, if
14:34:02 7 it makes for greater clarification for the declaration,
14:34:06 8 I would change this to -- I would simply remove "may"
14:34:16 9 and just have the sentence state "Secondhand cigarette
14:34:19 10 smoke actually accelerates the maturation of specific
14:34:22 11 cell types," in the context that we looked at, which was
14:34:25 12 to look at a secretory protein that is specific for the
14:34:33 13 cell type that we did that study in referenced as Ji, et
14:34:38 14 al., 1998.
14:34:39 15 Q. Is Ji, et al. a study that you participated
14:34:43 16 in?
14:34:43 17 A. Yes.
14:34:44 18 Q. Does that study show that exposure to
14:34:49 19 environmental toxicants such as cigarette -- secondhand
14:34:53 20 cigarette smoke actually accelerate -- or does it show
14:34:57 21 that it may actually accelerate
14:35:00 22 MR. BROOKEY: Objection. Vague and
14:35:01 23 ambiguous, asked and answered. He can answer.
14:35:03 24 THE WITNESS: Okay. And that particular
14:35:06 25 study does actually show that it accelerates the
14:35:11 26 maturation of a specific cell type based both on the
14:35:16 27 expression of the gene through looking at levels of
14:35:22 28 messenger RNA and also on the production of the protein



14:35:27 1 within the cell. The only clarification that I would
14:35:30 2 make on this is in this terminology I refer to it as
14:35:36 3 secondhand cigarette smoke. That's not exact -- That is
14:35:40 4 not what we exposed the animals to. We exposed them to
14:35:45 5 aged and diluted sidestream smoke.
14:35:48 6 MR. CAFFERTY: Q. So would you change that
14:35:50 7 sentence then to say "such as ADSS actually accelerate
14:35:55 8 the maturation"?
14:35:59 9 A. Yes.
14:36:00 10 Q. Okay. What does it mean to accelerate the
14:36:05 11 maturation of a cell?
14:36:09 12 A. This is actually a process in which proteins
14:36:13 13 that are expressed as a function of time and cellular
14:36:20 14 maturation -- or cellular differentiation are being
14:36:24 15 expressed at different times. And so what I mean by
14:36:31 16 accelerate the maturation is that that maturation is
14:36:34 17 occurring earlier than it normally would.
14:36:38 18 Q. Okay. Is it a good thing or a bad thing to
14:36:41 19 accelerate the maturation of a cell?
14:36:45 20 MR. BROOKEY: Objection. It lacks
14:36:47 21 foundation. It's vague and ambiguous. He can try to
14:36:49 22 answer.
14:36:49 23 THE WITNESS: And we don't know the answer to
14:36:52 24 that.
14:36:52 25 MR. CAFFERTY: Q. Okay. What's the next
14:37:02 26 word or phrase that's circled in your declaration?
14:37:04 27 A. Page 17, line 7, the word is "suggest." The
14:37:08 28 sentence reads, "A number of studies suggest that the



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14:37:10 1 processes of cellular differentiation, branching
14:37:12 2 morphogenesis and overall lung growth can be affected by
14:37:15 3 exposure to chemicals." I would not change that word.
14:37:19 4 Q. Okay. What's the next word or phrase that's
14:37:21 5 circled in your declaration?
14:37:23 6 A. Same page, line 17, the word is "likely."
14:37:28 7 The sentence reads, "Since growth essentially ends at
14:37:31 8 puberty, exposure to chemicals and other factors are
14:37:36 9 likely to have completely different consequences in the
14:37:39 10 adult compared to that found in children." I would not
14:37:42 11 change that word.
14:37:43 12 Q. What's the next word or phrase that is
14:37:47 13 circled in your declaration?
14:37:49 14 A. Same page, line 20, the phrase is "may have."
14:37:53 15 The sentence reads, "Abnormal developmental changes that
14:37:56 16 occur in the perinatal period due to exposure to a
14:37:59 17 variety of chemicals and/or conditions may have
14:38:01 18 long-term effects persisting into adult life." I would
14:38:08 19 not change that.
14:38:09 20 Q. What's the next word or phrase that's circled
14:38:11 21 in the declaration?
14:38:12 22 A. Line 21 of the same page, and it's the same
14:38:16 23 phrase, "may have." "Exposure to substances during
14:38:19 24 critical windows of development may have profound
14:38:21 25 effects that would not be seen if the same exposure were
14:38:25 26 to occur in the adult. I would not change that phrase.
14:38:30 27 Q. What's the next word or phrase that's
14:38:32 28 circled?



14:38:33 1 A. Line 23 of the same page, "can have." The
14:38:35 2 sentence reads, "Since lung development occurs over the
14:38:38 3 entire perinatal period, exposure effects can have
14:38:41 4 significant consequences whether they occur during the
14:38:45 5 pre- or postnatal period of life." I would not change
14:38:49 6 that phrase.
14:38:50 7 Q. What's the next word or phrase that's circled
14:38:53 8 in your declaration?
14:38:56 9 A. Page 20, line 7. The word is "presumed."
14:39:00 10 The sentence reads, "It is also presumed that they play
14:39:06 11 an important role in epithelial differentiation and
14:39:10 12 control of surfactant secretion in connection with the
14:39:14 13 growth of the gas exchange region during this stage."
14:39:18 14 And this is in reference to fibroblast-like
14:39:28 15 cells that are present in the lungs at this time. I
14:39:36 16 don't think that word needs to be changed. It's a
14:39:40 17 certainty, but it doesn't need to be changed.
14:39:43 18 Q. What do you mean it's a certainty?
14:39:45 19 A. That these cells are definitely going to be
14:39:50 20 important in playing a role in epithelial
14:39:52 21 differentiation.
14:40:17 22 So I would simply remove that -- I would
14:40:18 23 remove just the first portion of that sentence. We can
14:40:21 24 just start the sentence with "They play an important
14:40:23 25 role."
14:40:23 26 Q. And what's the basis for that change?
14:40:26 27 A. Scientific studies, peer-reviewed literature,
14:40:28 28 to show that these cells are very important in cross



14:40:30 1 talk with other cells during lung development and
14:40:32 2 cellular differentiation. And that's my basis.
14:40:35 3 Q. What's the next word or phrase that's circled
14:40:37 4 in your declaration?
14:40:42 5 A. Page 23, line 8, "suggest." The sentence

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14:40:46 6 reads, "Recent studies suggest that changes in the
14:40:49 7 subcellular structure of cells coincide with the first
14:40:52 8 expression of metabolic function."
14:41:21 9 Again, I don't see a real need to change that
14:41:25 10 phrase.
14:41:26 11 Q. What's the next word or phrase that's circled
14:41:29 12 in your declaration?
14:41:31 13 A. Page 24, line 1, the phrase is "can alter."
14:41:36 14 The sentence reads, "A number of studies have shown that
14:41:41 15 early postnatal exposure to environmental toxicants can
14:41:44 16 alter the developmental profile for these isozymes."
14:41:55 17 This particular reference is a reference for
14:41:57 18 environmental tobacco smoke.
14:42:02 19 My purpose for writing this was to simply
14:42:05 20 suggest that there may be a variety of environmental
14:42:08 21 toxicants that can alter the developmental profile, but
14:42:12 22 if we used this particular reference that was
14:42:15 23 conclusive, that sidestream cigarette smoke does alter
14:42:20 24 the developmental profile for these isozymes.
14:42:26 25 Q. So how would you change that sentence?
14:42:31 26 A. I don't think I would change it. I just
14:42:45 27 think that the reference is just one example. But
14:42:49 28 again, this part -- this is the supplement to my



14:42:53 1 declaration, and so this was where I was trying to talk
14:42:57 2 more about lung development, environmental toxicants and
14:43:01 3 just using environmental tobacco smoke as an example.
14:43:04 4 Q. Let's stop there just for a minute because
14:43:09 5 you said this is the part that's the supplement. I
14:43:11 6 think you might have used the word "amendment" before.
14:43:14 7 Which portion of your declaration do you consider to be
14:43:16 8 the supplement to the declaration?
14:43:17 9 MR. BROOKEY: Objection. Asked and answered.
14:43:19 10 He can answer it again.
14:43:21 11 THE WITNESS: That portion of the declaration
14:43:26 12 that begins on page 16, line 12.
14:43:35 13 MR. CAFFERTY: Q. Continuing to where?
14:43:46 14 A. To page 28, line 8.
14:43:50 15 Q. Why do you call -- What do you mean when you
14:43:54 16 call that a supplement to your declaration?
14:43:57 17 MR. BROOKEY: Objection. Asked and answered.
14:43:58 18 He can answer it again.
14:44:00 19 THE WITNESS: This part of the declaration
14:44:03 20 was just simply to help better understand the importance
14:44:10 21 of and the processes of perinatal lung development and
14:44:17 22 the importance of this particular time of lung
14:44:22 23 development and growth that may be relevant to critical
14:44:29 24 windows of exposure for environmental toxicants
14:44:33 25 including environmental tobacco smoke.
14:44:35 26 MR. CAFFERTY: Q. Was this part of your
14:44:37 27 declaration added after you had prepared the first part
14:44:40 28 of your declaration through page 16?



14:44:43 1 A. No. This was simply submitted with my
14:44:46 2 declaration as an example of the sorts of things that I
14:44:52 3 would be discussing for a workshop on critical -- on
14:44:56 4 children's health. And I simply sent it along as a
14:45:02 5 clarification for why health effects in children and
14:45:09 6 factors that must be considered are completely different
14:45:12 7 than for adults.
14:45:15 8 Q. Let's go back to the next word or phrase
14:45:21 9 that's circled.
14:45:24 10 A. Page 24, line 10, the phrase "associated

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14:45:29 11 with." The sentence reads, "Exposure to ETS is also
14:45:34 12 associated with significant risks in the development
14:45:37 13 and/or exacerbation of asthma, airway
14:45:41 14 hyperresponsiveness and other respiratory symptoms such
14:45:45 15 as cough, wheeze and mucus production." For me as a
14:45:50 16 scientist, I didn't have any problems with that. But
14:45:54 17 for the purposes of clarification, there is a causal
14:45:59 18 relationship between exposure to ETS and all of these
14:46:03 19 symptoms or disease processes that are listed here.
14:46:08 20 Q. Would you change this phrase?
14:46:19 21 A. Again, if it needs further clarification in
14:46:28 22 terms of the legal necessity of things, because for me,
14:46:33 23 again, I see "is associated with" as a causal
14:46:44 24 relationship.
14:46:47 25 Q. What I'm trying to get at is when you give
14:46:52 26 your opinion at trial, are you going to say "associated
14:46:56 27 with," or are you going to say something different when
14:46:58 28 you talk about this part of your opinion?



14:47:00 1 A. Uh-huh.
14:47:01 2 MR. BROOKEY: Objection to the extent it
14:47:04 3 calls for speculation, lacks any foundation. But he can
14:47:06 4 answer.
14:47:07 5 THE WITNESS: To answer that question and
14:47:15 6 with regard to this, the way I would word this is I
14:47:19 7 would just simply say, "Exposure to ETS significantly
14:47:27 8 increases the risk in the development or exacerbation of
14:47:32 9 asthma, airway hyperresponsiveness and other respiratory
14:47:36 10 symptoms such as cough, wheeze and mucus production."
14:47:40 11 MR. CAFFERTY: Q. What do you mean by
14:47:42 12 significantly increase?
14:47:43 13 A. Beyond doubt, that exposure to ETS among
14:47:52 14 children is associated with a significant risk in those
14:47:59 15 symptoms being present in the children. Not all
14:48:02 16 children, not 100 percent of those children, but in a
14:48:06 17 significant number of children.
14:48:07 18 Q. What do you mean by significant number of
14:48:11 19 children?
14:48:12 20 A. To show that there is a causal relationship
14:48:15 21 between ETS exposure and those symptoms.
14:48:21 22 Q. I guess what I'm trying to get at is what you
14:48:25 23 mean when you use the term "significantly increases" or
14:48:28 24 "significant number." What does significant mean? Is
14:48:30 25 it 10 percent, 20 percent, 50 percent, 75 percent?
14:48:36 26 A. In this particular instance, I think that
14:48:42 27 these associations are causal, so by statistically
14:48:48 28 significant, what I mean is it meets the rigors and the



14:48:53 1 criteria for a biostatistical analysis to allow you to
14:48:57 2 make a definitive statement like this.
14:49:03 3 In other words, if we're talking about the
14:49:06 4 development or exacerbation of asthma, is ETS a
14:49:12 5 causative -- could ETS be the cause for that? And the
14:49:17 6 answer is yes, based on epidemiological studies that
14:49:24 7 show that that is a significant risk factor.
14:49:27 8 Q. What are the rigors and criteria for a
14:49:31 9 biostatistical analysis that you're referring to?
14:49:37 10 A. I think that it would be based on the study
14:49:42 11 design, on eliminating confounding factors, on being
14:49:50 12 very rigorous and objective in the way this type of
14:49:53 13 analysis would be done to eliminate any subjective bias
14:50:00 14 or any preconceived ideas about how the results should
14:50:05 15 be.

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14:50:08 16 Q. What's the next word or phrase that's circled
14:50:11 17 in your declaration?
14:50:12 18 A. Page 24, line 12. It's two parts that are
14:50:19 19 circled, "epidemiological studies", "suggest," and also
14:50:24 20 in that same sentence is "may have." So I'll just cover
14:50:28 21 all of those. The sentence reads, "Epidemiological
14:50:32 22 studies suggest that exposure to smoke during the
14:50:35 23 perinatal period may have adverse effects on lung
14:50:40 24 function that can exist" -- "that can persist into
14:50:44 25 adulthood."
14:50:49 26 I have no idea why "epidemiological studies"
14:50:52 27 is circled there. And this is what I was talking about,
14:51:02 28 that there are a number of epidemiological studies that



14:51:04 1 are showing now that children who are exposed during
14:51:10 2 early childhood -- well, during the perinatal period,
14:51:14 3 that they can actually -- they actually show that they
14:51:17 4 have persistent respiratory effects, be it chronic
14:51:21 5 inflammation or be it wheezing or coughing or repeated
14:51:29 6 admissions into the hospital emergency room or problems
14:51:36 7 with asthma or the frequency of asthmatic attacks or the
14:51:42 8 severity of that.
14:51:43 9 Those have all been, I think, clearly
14:51:45 10 demonstrated. But when we define adulthood, I don't
14:51:49 11 know if those studies have actually shown that, that
14:51:56 12 what happened in childhood, would that still be
14:51:59 13 persisting in adulthood. And I'm not sure because most
14:52:03 14 of these studies that I'm referring to usually are in
14:52:07 15 children, looking at health effects in children, or
14:52:11 16 they at the latest age would be, you know, in the early
14:52:15 17 teenage years.
14:52:17 18 Q. Based on that explanation, would you change
14:52:20 19 the way in which the sentence that begins on line 12 and
14:52:24 20 ends on line 13 on page 24 reads?
14:52:44 21 A. Based on the fact that I'm talking about
14:52:48 22 persisting into adulthood, I think we would still have
14:52:50 23 to leave it as is.
14:52:52 24 Q. What's the next word or phrase that's circled
14:52:54 25 in your declaration?
14:52:55 26 A. Page 25, line 3, the phrase "appear to be."
14:53:01 27 The sentence reads, "Such exposure conditions are not
14:53:05 28 uncommon in humans and appear to be essential for airway



14:53:08 1 hyperresponsiveness to develop."
14:53:25 2 This is in reference to our animal studies in
14:53:27 3 which we have found that based on our studies that we
14:53:30 4 have done to date, that airway hyperresponsiveness in a
14:53:38 5 rat must be both in utero exposure with the mother being
14:53:44 6 exposed to cigarette smoke as well as postnatal exposure
14:53:48 7 to cigarette smoke to develop airway
14:53:51 8 hyperresponsiveness.
14:53:53 9 So that's without question based on our
14:54:00 10 peer-reviewed studies that we have done to date.
14:54:05 11 These kind of exposure conditions could also
14:54:13 12 occur in humans in the fact that a woman during her
14:54:18 13 pregnancy may be passively exposed to cigarette smoke
14:54:22 14 and then that child be directly exposed to secondhand
14:54:26 15 cigarette smoke as he or she is growing up.
14:54:31 16 But the question that is in my mind is
14:54:36 17 whether those both in utero and postnatal exposures are
14:54:43 18 necessary in a child, in a human child, for airway
14:54:47 19 hyperresponsiveness to develop. In other words, what
14:54:50 20 I'm trying to say is that in humans children -- they may

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14:54:54 21 only need to be exposed postnatally to develop airway
14:54:59 22 hyperresponsiveness.
14:55:02 23 So how would I change that?
14:55:05 24 Q. Would you change it, yes.
14:55:09 25 A. No. I don't think I could based on the fact
14:55:20 26 that I don't think I would say that humans have to have
14:55:24 27 exposure both in utero and postnatal to develop airway
14:55:29 28 hyperresponsiveness.



14:55:34 1 Q. What's the next word or phrase that's
14:55:38 2 circled?
14:55:38 3 A. That is all.
14:55:40 4 Q. That's it. Okay.
14:55:47 5 Why don't we take a break now. We've been at
6 it for a little more than an hour.
14:55:49 7 VIDEO OPERATOR: Going off the record, the
14:55:51 8 time is 2:55.
9 (Recess taken from 2:55 to 3:07 p.m.)
15:07:12 10 VIDEO OPERATOR: Back on the record. The
15:07:14 11 time is 3:07.
15:07:19 12 MR. CAFFERTY: Q. Dr. Pinkerton, I'd like to
15:07:22 13 switch subjects at this time and start to -- well,
15:07:25 14 actually, let me just finish up on that last subject
15:07:30 15 that we were talking about. Is there anything
15:07:32 16 inaccurate in your declaration, Exhibit 4 -- excuse me,
15:07:36 17 538, as it's currently written?
15:07:38 18 A. Not to my knowledge.
15:07:40 19 Q. And when you prepared that declaration, did
15:07:43 20 you have the assistance of people at Mr. Brookey's law
15:07:50 21 firm?
15:07:51 22 MR. BROOKEY: I'd just object. It's been
15:07:53 23 asked and answered a few times. He can answer it again.
15:07:56 24 THE WITNESS: Only from the perspective of
15:07:58 25 putting it onto this form and also the introductory
15:08:03 26 paragraphs describing my background.
15:08:06 27 MR. CAFFERTY: Q. Would it be fair to say
15:08:08 28 that the first time that any lawyer representing



15:08:11 1 plaintiff raised any questions about the way in which
15:08:14 2 you expressed your opinions was when Mr. McGuire raised
15:08:18 3 questions about your declaration last week?
15:08:21 4 MR. BROOKEY: Objection. Asked and answered.
15:08:22 5 He can answer it again.
15:08:24 6 THE WITNESS: I believe so.
15:08:25 7 MR. CAFFERTY: Q. What I'd like to do now is
15:08:28 8 just ask you a little bit about your studies. I don't
15:08:31 9 think we really got a very good picture about how you
15:08:34 10 performed those studies. And what I want to talk about
15:08:37 11 are the ADSS studies, which I understand has been a
15:08:41 12 focus of your research; is that correct?
15:08:42 13 A. Yes.
15:08:43 14 Q. And for how long has that been a focus of
15:08:46 15 your research?
15:08:46 16 A. For approximately nine years.
15:08:48 17 Q. Over that period of time, approximately how
15:08:51 18 many experiments have you done with ADSS?
15:09:04 19 A. Approximately 50 to 60 experiments.
15:09:09 20 Q. Okay. What generally are the types of
15:09:13 21 experiments that you've done with ADSS?
15:09:20 22 A. The primary studies have been looking at the
15:09:27 23 respiratory system in the rat during perinatal lung
15:09:36 24 development up through young adult animals. These have
15:09:42 25 been done using a smoking and exposure system that

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15:09:50 26 allows us to carefully monitor the conditions of
15:09:54 27 exposure to control them in terms of the timing and the
15:10:00 28 duration of exposures and to be able to document those



15:10:08 1 with measurements of carbon monoxide, total suspended
15:10:13 2 particulates, and nicotine measurements, as well as
15:10:17 3 measurement of temperature and relative humidity.
15:10:21 4 We've done these studies using research
15:10:25 5 cigarettes obtained from the University of Kentucky,
15:10:29 6 which we have conditioned prior to burning the
15:10:33 7 cigarettes. And these cigarettes have been smoked in a
15:10:37 8 system that we've designed and constructed and used so
15:10:43 9 that they will be smoked under very precise conditions
15:10:46 10 that we refer to as Federal Trade Commission, or FTC,
15:10:52 11 conditions.
15:10:53 12 Some studies have involved exposures of mice
15:11:05 13 to aged and diluted sidestream smoke. There have also
15:11:14 14 been studies that have looked at the effects of aged and
15:11:17 15 diluted sidestream smoke on the postnatal development of
15:11:22 16 the lung in guinea pigs.
15:11:32 17 Our studies have involved broncho-alveolar
15:11:36 18 lavage to recover cells from the lungs to look at the
15:11:41 19 total numbers of cells that are present in the lungs,
15:11:45 20 their viability, cell differential.
15:11:49 21 We've done numerous studies to look at the
15:11:52 22 anatomy of the developing lung, as well as to use
15:11:57 23 immunohistochemical approaches to determine the presence
15:12:01 24 of proteins of particular interest in better assessing
15:12:08 25 cellular maturation or cellular differentiation.
15:12:17 26 We have also done studies to look at
15:12:20 27 biochemical measurements as a way of determining what is
15:12:27 28 happening to the developmental profile for metabolic



15:12:34 1 systems within the lung with this particular emphasis on
15:12:39 2 cytochrome P450 mono-oxygenasis.
15:12:53 3 We've also done studies to look at the
15:12:59 4 physiological function of the lungs with exposure to
15:13:03 5 aged and diluted sidestream cigarette smoke.
15:13:07 6 And most recently, we have been studying the
15:13:13 7 effects of ETS during perinatal development in nonhuman
15:13:19 8 primates.
15:13:20 9 Q. That would be the Rhesus monkeys?
15:13:23 10 A. Yes.
15:13:23 11 Q. Of the 50 studies that you have done,
15:13:26 12 approximately how many are for rats?
15:13:39 13 A. Probably 40 to 45.
15:13:45 14 Q. So the majority would be for rats then?
15:13:48 15 A. Yes.
15:13:49 16 Q. And of those approximately 50 studies, how
15:13:51 17 many would be for mice?
15:14:00 18 A. Approximately five to ten.
15:14:06 19 Q. And then of the approximately 50 studies, how
15:14:08 20 many would be for guinea pigs?
15:14:14 21 A. Approximately five.
15:14:21 22 Q. And of the approximately 50 studies, how many
15:14:25 23 for Rhesus monkeys?
15:14:26 24 A. Two.
15:14:27 25 Q. And those both are ongoing today?
15:14:29 26 A. Yes.
15:14:33 27 Q. I want to try to put this in simple terms so
15:14:38 28 that everyone can understand. In performing these



15:14:41 1 studies, is it fair to say that you take the test

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15:14:43 2 animals, and you place them in a chamber that has
15:14:47 3 tobacco smoke in it?
15:14:47 4 A. Yes.
15:14:49 5 Q. Is it also fair to say that you take other
15:14:51 6 animals, control animals, and expose them to filtered
15:14:59 7 air?
15:15:00 8 A. Yes.
15:15:00 9 Q. And about how many control animals versus
15:15:04 10 test animals do you have in a particular experiment?
15:15:10 11 A. If our studies are involved with doing just
15:15:15 12 one level of concentration of tobacco smoke, the animals
15:15:22 13 will be divided into -- half into a filtered air control
15:15:27 14 group and half into a smoke-exposed group.
15:15:40 15 Q. And approximately how many total animals do
15:15:43 16 you have in an experiment?
15:15:45 17 A. It's dependent upon the experiment. If these
15:15:51 18 experiments involve working with pregnant, timed
15:15:58 19 pregnant animals, that will give birth, and we will do
15:16:03 20 postnatal studies, approximately 300 animals are
15:16:07 21 involved in an experiment.
15:16:09 22 Q. In each study?
15:16:10 23 A. Yes.
15:16:13 24 Q. Is that true for rats, mice, guinea pigs and
15:16:18 25 monkeys?
15:16:19 26 A. No.
15:16:21 27 Mice: We have -- our studies that I'm
15:16:24 28 directly looking at work with young adult animals, so



15:16:30 1 we're not looking at the perinatal period.
15:16:37 2 Q. I'm sorry. Were you going to continue?
15:16:41 3 A. Guinea pigs: The approximate number would be
15:16:54 4 20 to possibly 40 animals.
15:17:06 5 For Rhesus monkeys, it's a total of eight
15:17:11 6 mothers and their offspring, which they only give birth
15:17:17 7 to one infant.
15:17:29 8 Q. So for the monkeys, you would have a total of
15:17:33 9 16 animals, the eight mothers and the eight infants?
15:17:36 10 A. Yes.
15:17:36 11 Q. And that would be 16 per each study, so a
15:17:40 12 total of 32 monkeys altogether, the two studies?
15:17:42 13 A. Yes, yes.
15:17:43 14 Q. And what are you studying with the Rhesus
15:17:45 15 monkeys?
15:17:45 16 A. The effects of exposure to aged and diluted
15:17:48 17 sidestream smoke during the perinatal period.
15:17:51 18 Q. When you say "perinatal," just to make that a
15:17:54 19 little simpler, you mean both to the fetus when it's in
15:17:58 20 the womb and to the infant after it's born?
15:18:01 21 A. That's correct.
15:18:02 22 Q. So you're not looking at prenatal only or
15:18:06 23 postnatal only for the monkeys; is that right?
15:18:09 24 A. That's correct.
15:18:09 25 Q. When you did the tests on the guinea pigs,
15:18:11 26 what were you doing?
15:18:14 27 A. Those were postnatal exposures only. So the
15:18:17 28 guinea pigs would begin exposures at approximately eight



15:18:21 1 days of age, and those would continue on for a period of
15:18:26 2 approximately five weeks with exposures being five days
15:18:36 3 a week, six hours a day.
15:18:47 4 Q. With respect to the mice, you said you did it
15:18:49 5 for young adults. Would that be postnatal exposures as
15:18:51 6 well?

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15:18:52 7 A. Yes, yes.
15:18:53 8 Q. And for the mice, what were you looking for?
15:18:55 9 A. Our initial studies were to look at the
15:19:03 10 strained susceptibility to exposure to environmental
15:19:07 11 tobacco smoke to determine if there were specific
15:19:10 12 strains of mice that might be more sensitive to the
15:19:14 13 effects of environmental tobacco smoke than others.
15:19:17 14 Subsequent to those studies, we looked at
15:19:21 15 short-term exposures to environmental tobacco smoke and
15:19:26 16 how that affected subsequent exposure to ozone, which is
15:19:30 17 an oxidant gas, a common air pollutant.
15:19:43 18 Q. When you looked at the short-term exposures
15:19:45 19 to environmental tobacco smoke and how that affected
15:19:48 20 subsequent exposure to ozone, what did you find?
15:19:51 21 A. That those mice that had been previously
15:19:56 22 exposed -- or preexposed to environmental tobacco smoke
15:20:00 23 developed a significantly heightened sensitivity to the
15:20:04 24 effects of ozone.
15:20:06 25 Q. How did you determine that heightened
15:20:08 26 sensitivity?
15:20:09 27 A. In two manners: one, by doing
15:20:13 28 broncho-alveolar lavage and determining the amount of



15:20:19 1 protein that we could recover from washing the lungs,
15:20:24 2 and secondly, from looking at the rate of cell
15:20:28 3 proliferation in the lungs of these mice.
15:20:31 4 Q. How many of these mice did you have in each
15:20:34 5 study?
15:20:59 6 A. For these type of studies, there is
15:21:01 7 approximately 40 to 60 mice in the study.
15:21:03 8 Q. What is broncho-alveolar lavage?
15:21:04 9 A. This is a procedure in which sterile buffered
15:21:09 10 saline is injected into the lung by way of the trachea,
15:21:18 11 usually with a cannula placed in the trachea, and then
15:21:24 12 that fluid is recovered by using a syringe to recover it
15:21:28 13 from the lungs. It is a procedure that's used
15:21:33 14 experimentally as well as in clinics as a way of being
15:21:38 15 able to recover cells from the lungs for diagnostic
15:21:44 16 purposes.
15:21:45 17 Q. So you recover the cells without killing the
15:21:50 18 animal?
15:21:50 19 A. For our studies, we always kill the animal.
15:21:56 20 So it's -- we never do lavage with the idea of having
15:22:03 21 the animal survive.
15:22:08 22 Q. What about cell proliferation? How do you do
15:22:12 23 that?
15:22:13 24 A. This is used -- This is done by using a
15:22:15 25 nucleotide analog, so that any cells that are undergoing
15:22:20 26 active DNA synthesis, they'll incorporate this
15:22:24 27 nucleotide analog into their DNA as they're synthesizing
15:22:28 28 new DNA. And then we can use immunohistochemical



15:22:32 1 approaches to be able to identify the presence of this
15:22:35 2 nucleotide analog within the DNA of these cells.
15:22:38 3 Q. Do you also have to kill the animal to do the
15:22:41 4 cell proliferation analysis?
15:22:43 5 A. Yes.
15:22:43 6 Q. When you did these studies with the mice, did
15:22:47 7 you make any observations of their physical condition to
15:22:50 8 see whether or not they were having any pulmonary
15:22:53 9 problems?
15:22:58 10 A. In terms of doing pulmonary function testing,
15:23:01 11 no. In terms of observing the well-being of the animal,

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15:23:08 12 yes. And there were no signs of any stress or any
15:23:13 13 complications with the exposures that we did with the
15:23:16 14 mice.
15:23:16 15 Q. So what then was the basis for your
15:23:19 16 conclusion that the mice were more sensitive to ozone
15:23:22 17 when they had been preexposed to ETS?
15:23:25 18 A. This is based on our analysis of the lungs
15:23:28 19 after we had done the lavage to show that there were
15:23:33 20 statistically significant increases in the amount of
15:23:37 21 protein recovered from the lungs from animals that had
15:23:40 22 been preexposed to ETS and then exposed to ozone
15:23:44 23 compared to animals that had only been exposed to ozone.
15:23:48 24 And also, the cell proliferation studies that
15:23:53 25 we did using this nucleotide analog showed that those
15:23:58 26 animals that had been preexposed to ETS and then
15:24:01 27 subsequently exposed to ozone had a significantly
15:24:04 28 greater rate of labeling for the nucleotide analog



15:24:09 1 compared to animals that were only exposed to ozone.
15:24:13 2 Q. Do mice get asthma?
15:24:17 3 A. There is an attempt to use mice to create a
15:24:21 4 model of asthma in mice by sensitizing mice to certain
15:24:29 5 allergens to create an asthmatic-like condition. So in
15:24:37 6 terms of whether mice can actually have asthma, they can
15:24:42 7 have all the hallmarks of it and are referred to as an
15:24:49 8 asthmatic model of asthma.
15:24:50 9 Q. Did you do that in any of your studies?
15:24:53 10 A. No.
15:24:54 11 Q. With respect to the rat studies, you
15:24:58 12 indicated that there is about 300 rats per study. Does
15:25:01 13 that include the mothers and the offspring, or is that
15:25:04 14 just the mothers?
15:25:05 15 A. In an experiment like that, that would be
15:25:10 16 both, the combination of both.
15:25:12 17 Q. So a total of 300 animals, mothers plus
15:25:15 18 offspring?
15:25:15 19 A. Yes.
15:25:16 20 Q. About how many mothers do you start with?
15:25:19 21 A. In these studies, 32.
15:25:21 22 Q. In the rat studies, what were you looking
15:25:25 23 for?
15:25:26 24 A. In the rat studies, we were primarily looking
15:25:31 25 for changes in the maturation and the growth and
15:25:35 26 development of the respiratory system with a particular
15:25:40 27 emphasis on the airways and the epithelium of the
15:25:44 28 airways, as well as the gas exchange portions of the



15:25:49 1 lungs.
15:25:49 2 We were also looking at cellular
15:25:53 3 differentiation using immunohistochemical approaches to
15:25:57 4 identify the presence of proteins.
15:26:00 5 We also were interested in looking at
15:26:05 6 potential changes with the neuroendocrine cell
15:26:10 7 population that is present as a rare epithelial cell
15:26:14 8 type lining the airways of the lungs that has been
15:26:18 9 associated with bronchopulmonary dysplasia, asthma, with
15:26:26 10 exposure to high levels of nicotine, as well as to
15:26:31 11 environmental tobacco smoke.
15:26:33 12 And also, in these studies we were interested
15:26:37 13 in doing the lung physiology to look at changes in
15:26:43 14 airway hyperreactivity.
15:26:51 15 Q. Is that it?
15:26:53 16 A. Yes.

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15:26:53 17 Q. So basically those four things that you
15:26:55 18 mentioned: maturation, looking for the proteins,
15:26:58 19 looking for the neuroendocrine cells, and looking for
15:27:02 20 airway hyperreactivity?
15:27:03 21 A. Based on physiological measurements, yeah.
15:27:07 22 We've also developed a new method which has
15:27:11 23 not been published but which actually allows us to look
15:27:15 24 at specific airway generations and actually do the
15:27:20 25 methacholine challenge on specific airway generations
15:27:25 26 that we have in culture so that we can look to see if
15:27:29 27 there's differences in airway narrowing based on airway
15:27:32 28 generation within the respiratory tract.



15:27:35 1 Q. Let's try to put that in simpler English so
15:27:38 2 that we can understand. What does that mean?
15:27:41 3 A. One of the -- This is called lung slice video
15:27:46 4 micrometry. It's an approach that we have developed
15:27:50 5 specifically to better understand the functional
15:27:55 6 anatomical relationship of specific airways in the lung.
15:28:02 7 This is a method which we've developed in
15:28:04 8 which we can actually remove the lungs from the animal,
15:28:10 9 inflate it with an agarose gel that contains a media
15:28:17 10 that maintains the viability of the tissues. And then
15:28:19 11 we can actually cut slices, so there are tissue slices
15:28:23 12 of the lung that we can then actually have in culture in
15:28:27 13 an incubator. And we can actually be able to tack down
15:28:31 14 these tissue slices with surgical glue and be able to
15:28:35 15 look at changes in airway dimensions as we incubate
15:28:42 16 these lung slices and put on increasing doses of
15:28:45 17 methacholine, which is the pharmacological agent that is
15:28:49 18 used for looking at -- doing airway challenge to see if
15:28:53 19 you've got airway hyperreactivity taking place.
15:28:56 20 Q. How does that differ from the way that you
15:29:00 21 used to do it?
15:29:01 22 A. This is a method that is a novel, new
15:29:05 23 approach so that we can actually determine by specific
15:29:08 24 airway generation what is happening.
15:29:11 25 But again, this is a method that is -- that
15:29:16 26 we are using currently in the studies, but it's not
15:29:19 27 published, so it's not anything that I would be
15:29:23 28 referring to. In my declaration, I certainly didn't



15:29:31 1 refer to it.
15:29:31 2 Q. What are the results that you're seeing from
15:29:33 3 this new technique?
15:29:34 4 A. It's still too early to really conclude
15:29:38 5 anything.
15:29:38 6 Q. So in using this new method, you have to kill
15:29:42 7 the animal first; correct?
15:29:44 8 A. Yes.
15:29:44 9 Q. You remove the lungs from the animal?
15:29:47 10 A. Yes.
15:29:47 11 Q. And then you do all these things that you
15:29:50 12 said and expose it to methacholine and see what happens?
15:29:53 13 A. Yes.
15:29:54 14 Q. You do that for both the control animals
15:29:56 15 which are exposed to filtered air and to the test
15:29:59 16 animals that are exposed to the ADSS?
15:30:03 17 A. Yes.
15:30:05 18 Q. How did you previously -- in the studies that
15:30:08 19 you've done before and that you've published, how did
15:30:11 20 you do airway hyperreactivity analysis?
15:30:14 21 A. This is using an isolated perfused system in

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15:30:18 22 which the lungs are removed, and they are hung in a
15:30:22 23 humidified chamber and in which the pulmonary artery is
15:30:27 24 cannulated as well as the trachea. These lungs are
15:30:32 25 actually then in this isolated perfused system, and we
15:30:38 26 establish a baseline level for airway tone, as well as
15:30:42 27 lung compliance. And then through the pulmonary artery,
15:30:47 28 the methacholine is introduced into this isolated lung



15:30:51 1 preparation. And from that, we can actually measure
15:30:55 2 airway reactivity.
15:30:58 3 Q. And again, you have to kill the animal first
15:31:01 4 to get the lungs; correct?
15:31:02 5 A. Yes.
15:31:03 6 Q. Are the lungs still alive?
15:31:05 7 A. Yes.
15:31:06 8 Q. And how do you keep them alive?
15:31:08 9 A. Through using a buffered media that provides
15:31:13 10 nutrients to the lung through the circulation, through
15:31:17 11 the pulmonary circulation.
15:31:18 12 Q. And then how do you provide the pulmonary
15:31:21 13 circulation?
15:31:22 14 A. Through cannulation of the pulmonary artery.
15:31:24 15 Q. What does cannulation mean?
15:31:26 16 A. That means actually securing a needle or a
15:31:33 17 cannula into the lumen of the pulmonary artery, and
15:31:37 18 through this cannula or needle solutions are then passed
15:31:41 19 through the circulation and are removed from the
15:31:47 20 pulmonary circulation through a cannula that's placed in
15:31:50 21 the pulmonary vein.
15:31:52 22 Q. When you performed these rat tests, you said
15:31:58 23 you also did the neuro -- checked for the neuroendocrine
15:32:03 24 cells?
15:32:03 25 A. Yes.
15:32:04 26 Q. How did you do that?
15:32:05 27 A. We do that in two ways: One is to take the
15:32:08 28 lungs once we have made our measurements, physiologic



15:32:10 1 measurements, on them, and we take those tissues and
15:32:15 2 embed them into paraffin, cut sections on a microtome
15:32:20 3 and then use antibodies that are -- will stain
15:32:26 4 specifically for neuroendocrine cells and stain the
15:32:30 5 tissues and then use a microscope and count the number
15:32:36 6 of neuroendocrine cells that are present in the airways.
15:32:39 7 Q. So you actually look through the microscope
15:32:41 8 and count up one, two, three, four, et cetera?
15:32:44 9 A. Yes.
15:32:45 10 Q. Who does that?
15:32:46 11 A. Actually, there are a number of people in my
15:32:49 12 lab who are involved in those studies. Some have been
15:32:52 13 graduate students; some are staff research associates.
15:32:56 14 Q. So again, in doing that kind of a test, the
15:32:59 15 rat is killed; you take the lungs out; and then you take
15:33:04 16 the tissues that you want to sample and analyze
15:33:06 17 them; correct?
15:33:07 18 A. Yes.
15:33:08 19 Q. How do you do the test where you test for the
15:33:10 20 proteins?
15:33:12 21 A. We can do this in two manners. If we're just
15:33:16 22 wanting to measure the level -- if we wanted to look at
15:33:19 23 the level of the protein, we can use
15:33:21 24 immunohistochemistry, in which we have an antibody
15:33:24 25 that's directed against the protein, and we can stain
15:33:29 26 tissue sections and be able to visualize in what cells

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15:33:33 27 the protein is being expressed.
15:33:36 28 We can also homogenize the lung and be able

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15:33:42 1 to take aliquots of the homogenized lung and run them on
15:33:48 2 what's called a western blot, where we can actually
15:33:51 3 stain for the protein because it has a specific
15:33:56 4 molecular way that it will migrate. And we can actually
15:34:00 5 identify it in that way and actually quantify the amount
15:34:04 6 of the protein.
15:34:05 7 We can also use -- If this is a protein that
15:34:09 8 actually is an isozyme or an enzyme, we actually have
15:34:14 9 methods for -- biochemical methods in which we can
15:34:18 10 actually measure the activity of the enzyme by taking
15:34:22 11 the lung tissue and preparing what are referred to as
15:34:26 12 microsomes from the lung tissue and, using an
15:34:33 13 instrument, determine the enzyme activity levels within
15:34:40 14 these microsomes that we prepare for the lungs.
15:34:43 15 Q. So again, you have to kill the rat; you have
15:34:46 16 to take a sample of the tissue; and then you have to
15:34:49 17 analyze the tissue for these proteins. Is that
15:34:51 18 essentially what you do?
15:34:52 19 A. Yes.
15:34:53 20 Q. And in terms of maturation testing, what do
15:34:57 21 you do for that?
15:34:58 22 A. Maturation is based on looking at the anatomy
15:35:02 23 of the lung and the differentiation of the cells. And
15:35:08 24 so that is done histologically, also.
15:35:11 25 Q. What does that mean, histologically?
15:35:14 26 A. Basically taking lung tissues and embedding
15:35:19 27 them into some sort of media, cutting sections and using
15:35:25 28 antibodies that are to stain for certain proteins if

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15:35:30 1 that's a marker of maturation, or by doing optical
15:35:37 2 microscopy to just look at the cells and identify the
15:35:40 3 cell types as a way of determining the degree of lung
15:35:43 4 maturation, also.
15:35:46 5 Q. So again, you have to kill the rat; you have
15:35:50 6 to take a sample of the tissue; and you have to analyze
15:35:52 7 the tissue to see what you see in terms of maturation?
15:35:55 8 A. Yes.
15:35:56 9 Q. In performing these tests on the rat, do you
15:36:03 10 ever do physical observations of the rats to see if
15:36:06 11 they're having any pulmonary problems?
15:36:09 12 A. Yes. These animals are under constant
15:36:13 13 observation. Although we have an automatic smoking
15:36:18 14 system that does everything for us, we have a staff
15:36:24 15 person or a student assistant constantly in the room
15:36:29 16 observing the animals and also observing the smoking
15:36:32 17 system. We also have excellent animal care personnel
15:36:38 18 and facility who are constantly monitoring the animals.
15:36:42 19 Q. Okay. Was there any difference in the
15:36:46 20 physical condition between the rats who were exposed to
15:36:49 21 the ETS and the rats who were not exposed -- excuse me,
15:36:53 22 to the ADSS and the rats who were not exposed to the
15:36:57 23 ADSS?
15:36:59 24 A. Under the conditions of 1 milligram per cubic
15:37:01 25 meter, no. There is no physical difference between the
15:37:05 26 two.
15:37:05 27 Q. So you can't see any difference in the way in
15:37:08 28 which the unexposed rats are breathing versus the way in

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15:37:12 1 which the exposed rats are breathing?
15:37:14 2 A. That is correct.

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15:37:15 3 Q. Can rats get asthma?
15:37:17 4 A. Rats certainly can get increased
15:37:19 5 hyperreactivity of their airways, which is a hallmark of
15:37:22 6 asthma.
15:37:23 7 Q. Was there any physical observation that would
15:37:25 8 indicate that the rats when alive had any increased
15:37:29 9 hyperreactivity?
15:37:32 10 A. That is something that would be very
15:37:35 11 difficult to be able to observe or to deduce by just
15:37:43 12 looking at an animal.
15:37:45 13 Q. What is bronchopulmonary dysplasia?
15:37:49 14 A. This is an abnormal development of the lungs,
15:37:53 15 typically associated with development during the
15:37:59 16 perinatal period of the lungs.
15:38:01 17 Q. What are the physical manifestations of
15:38:04 18 bronchopulmonary dysplasia?
15:38:06 19 A. Typically decrements in pulmonary function,
15:38:13 20 respiratory infections, just complications that may
15:38:18 21 include wheezing, coughing, asthmatic-like conditions.
15:38:27 22 Bronchopulmonary dysplasia actually encompasses a lot of
15:38:34 23 different things that may be wrong with a child but that
15:38:40 24 typically involve abnormal development of the lungs that
15:38:46 25 is typically seen as alterations in pulmonary function
15:38:51 26 or in the increased observation of respiratory symptoms,
15:38:58 27 such as wheezing and cough.
15:39:01 28 Q. When the people who were monitoring the rats



15:39:04 1 to make sure that they were doing okay looked at them,
15:39:09 2 did they see any increase in wheezing or coughing in any
15:39:12 3 of the rats?
15:39:13 4 A. No.
15:39:13 5 Q. Did they see any increase in infections in
15:39:17 6 the rats that were exposed to the ADSS or the rats that
15:39:22 7 were not exposed to the ADSS?
15:39:25 8 A. No. We control very carefully for infection
15:39:28 9 and just to avoid any introduction of infectious agents
15:39:34 10 into our system.
15:39:38 11 Q. How do you measure -- What is a decrement in
15:39:42 12 pulmonary function?
15:39:45 13 A. It would be a reduction in some value that is
15:39:49 14 being measured that is -- that has something to do with
15:39:54 15 the ability of one -- for one to breathe.
15:39:58 16 So this could be, for example, if one took a
15:40:05 17 deep breath and then was asked to exhale as forcefully
15:40:09 18 and rapidly as possible, this is referred to as a forced
15:40:14 19 expiratory maneuver, and one thing that people would do
15:40:19 20 would be to look at how much volume can be expelled from
15:40:23 21 the lungs after one second, which would be referred to
15:40:27 22 as FEV-1. And so if there is -- one establishes what it
15:40:36 23 should be for a person of a given age -- well, more
15:40:40 24 importantly, of a given size. And then if one sees that
15:40:45 25 there is a reduction in that FEV-1 value, then that
15:40:51 26 would be referred to as a decrement in pulmonary
15:40:54 27 function.
15:40:54 28 Q. Okay. How do you measure -- Or can a rat



15:40:58 1 have a decrement in pulmonary function?
15:41:24 2 A. Yes.
15:41:25 3 Q. How do you measure a decrement in pulmonary
15:41:27 4 function for a rat?
15:41:28 5 A. Very carefully. Typically, one can use a
15:41:32 6 body platysmograph, would be a typical sort of thing,
15:41:34 7 which would just be a body box, and then one would look

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15:41:38 8 at different ventilatory parameters, such as respiratory
15:41:40 9 rate, title volume, to see if -- in a forced exhalation.
15:41:43 10 I'm not that familiar with how that can be done in a
15:41:46 11 rat. So I'm not as sure exactly how one goes about
15:41:49 12 that.
15:41:49 13 Q. Can it be done in a rat?
15:41:54 14 A. A measurement of FEV-1 in a rat, I don't
15:41:58 15 think I've ever seen that kind of measurement.
15:42:01 16 Q. Are there any kinds of measurements that
15:42:03 17 would measure decrements in pulmonary function that can
15:42:05 18 be done in a rat?
15:42:07 19 A. I think the approach that we've taken to use
15:42:12 20 methacholine challenge and to do it in the manner in
15:42:16 21 which we do as an isolated lung preparation, where
15:42:19 22 everything is very carefully controlled and measured,
15:42:23 23 where we've really removed any external forces, for
15:42:27 24 example, you know, some blood elements or central neural
15:42:33 25 control. I think that has been a very effective manner
15:42:38 26 in being able to show a change in pulmonary function as
15:42:44 27 it refers to as for the airways, for lung resistance, or
15:42:50 28 for just the elasticity of the lungs through dynamic



15:42:54 1 compliance measurements.
15:42:58 2 Q. As part of your 40 to 45 studies of rats, did
15:43:03 3 you do any measurements of decrements of pulmonary
15:43:10 4 function for the rats while they were still alive?
15:43:15 5 A. No.
15:43:30 6 Q. With respect to the methacholine studies that
15:43:32 7 you talked about, could you state in simple terms -- and
15:43:35 8 I mean simple terms -- how you did those studies? Try
15:43:40 9 to leave out the technical jargon if you can.
15:43:44 10 A. Okay. For these type of studies, we wish to
15:43:53 11 be able to look at how the lungs would function and
15:43:59 12 particularly how the airways would respond to a drug
15:44:06 13 that typically causes smooth muscle contraction and thus
15:44:11 14 narrowing of the airways. And as an airway narrows, the
15:44:19 15 resistance to flow down that airway becomes increased
15:44:23 16 because it's a smaller tube for which air can pass into
15:44:27 17 it. And so that can be measured as a resistance type of
15:44:32 18 measurement.
15:44:34 19 So in these particular studies, because we
15:44:37 20 really wanted to look at the effects of aged and diluted
15:44:42 21 sidestream smoke on the function of the lungs, not
15:44:46 22 influenced by any other factors such as the central
15:44:49 23 nervous system, neural control in that way, or potential
15:44:53 24 factors that may be introduced into the lungs by way of
15:44:58 25 the blood or the circulation, we prepared these lungs so
15:45:03 26 that they would be completely viable and we could
15:45:08 27 perfuse them. In other words, we could actually
15:45:11 28 introduce -- we could connect the arterial system that



15:45:15 1 feeds the pulmonary circulation and maintains
15:45:21 2 oxygenation of the lungs as well as providing the
15:45:25 3 nutrients to the lungs. We could hook that up to a
15:45:29 4 system so that we could have nutrients passing through
15:45:31 5 the lungs so that it would maintain the lung in a
15:45:35 6 completely viable live state. And then we could
15:45:38 7 actually ventilate the lungs just as it happens in the
15:45:43 8 thorax of the animal and establish exactly what the
15:45:47 9 airway tone was in the lungs of these animals as it is
15:45:53 10 in an isolated preparation. And then from there we
15:45:57 11 could introduce this drug which causes smooth muscle
15:46:00 12 contraction beginning at very, very low concentrations

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15:46:04 13 at first and then gradually increasing the concentration
15:46:08 14 of the drug to bring about the contraction and,
15:46:12 15 therefore, the narrowing of these airways.
15:46:16 16 And we compared animals that -- the lungs of
15:46:20 17 animals that had come from filtered air exposures to the
15:46:25 18 lungs of animals that had been exposed to aged and
15:46:31 19 diluted sidestream smoke during perinatal periods of
15:46:35 20 development.
15:46:36 21 And using those kind of conditions which we
15:46:39 22 really rigorously controlled, then we could just simply
15:46:42 23 look as a function of the increasing concentration of
15:46:47 24 this drug that we were using what was happening to the
15:46:52 25 resistance of air flow through these airways that we
15:46:56 26 were measuring as we increased the concentration of the
15:46:59 27 drug.
15:47:00 28 And in doing this, we were actually able to



15:47:03 1 demonstrate that these lungs are very much alive because
15:47:07 2 they actually show a very natural contraction of the
15:47:10 3 smooth muscle, a narrowing of the airways as we increase
15:47:14 4 the concentration of this drug.
15:47:17 5 And from the lungs of those animals that had
15:47:20 6 been exposed perinatally to aged and diluted sidestream
15:47:24 7 smoke, we saw that those lungs were doing exactly the
15:47:28 8 same thing. But you needed -- the key difference
15:47:30 9 between the control animals and those animals exposed to
15:47:34 10 ADSS was that you needed a far less -- a smaller dose or
15:47:41 11 concentration of the drug to bring about a greater
15:47:45 12 degree of resistance of air flow through the airways.
15:47:51 13 Q. What is it about the exposure to the ADSS
15:47:55 14 that caused less methacholine to be needed to create
15:48:02 15 this increased resistance?
15:48:04 16 A. That's what we're trying to find out. We
15:48:09 17 simply know that it occurs, that it's reproducible.
15:48:14 18 Each time we've done these experiments, we've really
15:48:17 19 tried to be very careful in having adequate sample size
15:48:22 20 and in doing these in exactly the same manner each time
15:48:28 21 and then repeating these studies over and over again.
15:48:31 22 Our hypothesis involves changes in potentially the
15:48:42 23 neuroendocrine cells that are present lining the airways
15:48:46 24 because they contain different types of mediators or
15:48:49 25 peptides that, when released, actually are known to
15:48:53 26 stimulate other cells to release mediators that can
15:48:57 27 cause smooth muscle contraction.
15:48:59 28 We've also considered that potentially the



15:49:04 1 nerve plexus that lines the airways may in some way be
15:49:09 2 altered by repeated exposures to environmental tobacco
15:49:14 3 smoke.
15:49:15 4 We've also considered the possibility that
15:49:17 5 there may be changes in the amount or distribution of
15:49:22 6 the smooth muscle that lines the airways that may lead
15:49:27 7 to a difference in the way they contract when you have a
15:49:32 8 drug that causes smooth muscle contraction present in
15:49:36 9 the circulation.
15:49:37 10 These are just a few of our hypotheses that
15:49:41 11 we're trying to pursue, and I'm certain there are others
15:49:49 12 that we haven't considered or we haven't had an
15:49:52 13 opportunity to test yet.
15:49:56 14 MR. CAFFERTY: Why don't we take a break now
15:49:58 15 because we're going to need to change the tape, and I
15:50:01 16 just have a little bit more after that.
15:50:04 17 VIDEO OPERATOR: This marks the end of tape

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15:50:06 18 No. 6 in the deposition of Kent Pinkerton. Going off
15:50:09 19 the record, the time is 3:50.
20 (Recess taken from 3:50 to 3:59 p.m.)
15:59:51 21 VIDEO OPERATOR: Back on the record. Here
15:59:58 22 marks the beginning of tape No. 7 in the deposition of
16:00:01 23 Kent Pinkerton. The time is 3:59.
16:00:05 24 MR. CAFFERTY: Q. Dr. Pinkerton, I just want
16:00:08 25 to pursue this subject of your animal testing a little
16:00:12 26 bit further before we move on to something else.
16:00:17 27 In the absence of any conclusion about the
16:00:24 28 cause of this methacholine response in the lungs that



16:00:29 1 were exposed to ADSS, can you say, based on your animal
16:00:34 2 studies, to a reasonable degree of scientific certainty
16:00:38 3 that ETS exposure causes asthma in children?
16:00:43 4 MR. BROOKEY: Objection. It's an incomplete
16:00:45 5 hypothetical. He can answer.
16:00:48 6 THE WITNESS: I think an important hallmark
16:00:52 7 of asthma is pulmonary function and changes in pulmonary
16:00:57 8 function. So if you don't use that particular measure
16:01:02 9 of looking at airway reactivity, then it would be very
16:01:09 10 difficult to establish that there is an adverse effect
16:01:15 11 going on with ETS exposures.
16:01:21 12 MR. CAFFERTY: Q. We talked about the tests
16:01:50 13 involving the guinea pigs. And what did the results of
16:01:53 14 those tests show?
16:01:53 15 A. These studies primarily showed that there
16:01:56 16 were changes in airway tone. Actually, we did studies
16:01:59 17 in which we found that the airways responded in a
16:02:02 18 different manner with ETS exposure compared to filtered
16:02:05 19 air, in which we concluded that because of these
16:02:09 20 differences in airway tone, this may suggest a mechanism
16:02:13 21 by which children may actually have an increased rate of
16:02:15 22 pulmonary infection based on the fact that they're not
16:02:18 23 clearing -- or they don't have a defensive mechanism of
16:02:21 24 their airways to minimize the inhalation of irritants or
16:02:30 25 of pathogens that may be airborne, and that that could
16:02:36 26 potentially lead to one of the reasons for why -- or one
16:02:41 27 of the explanations for why children who are exposed to
16:02:45 28 environmental tobacco smoke have more chronic



16:02:49 1 respiratory problems, as well as having more respiratory
16:02:58 2 infections.
16:02:59 3 Q. Okay. How did you determine in the guinea
16:03:03 4 pig study that there was a change in airway tone?
16:03:07 5 A. Through using the isolated perfused lung
16:03:09 6 system and measuring airway resistance and lung
16:03:13 7 compliance.
16:03:14 8 Q. And did you do that after you killed the
16:03:19 9 guinea pigs?
16:03:20 10 A. Yes.
16:03:21 11 Q. And then what did you do with the lungs after
16:03:24 12 you killed the guinea pig?
16:03:25 13 A. In selected studies, we examined the anatomy
16:03:29 14 of the airways and gas exchange portions of the lungs.
16:03:35 15 We published a paper in which we examined innervation of
16:03:41 16 the airways, as well as examined the morphologic
16:03:47 17 characteristics of the gas exchange regions of the
16:03:51 18 lungs.
16:03:53 19 Q. Based on your guinea pig studies, can you say
16:03:57 20 with a reasonable degree of scientific certainty that
16:04:00 21 children exposed to environmental tobacco smoke will
16:04:04 22 suffer chronic respiratory problems?

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16:04:09 23 A. The studies that we did in animals gives
16:04:12 24 biological plausibility for how that could occur, yes.
16:04:18 25 Q. So your answer is yes to the question?
16:04:20 26 A. Yes.
16:04:21 27 Q. The Rhesus monkey studies, which are ongoing
16:04:25 28 now, how far along are those studies?



16:04:28 1 A. In the second year of a three-year study.
16:04:32 2 Q. Are both studies in the second year?
16:04:35 3 A. No. We have one study that's in the second
16:04:40 4 year, and we have one study that's in its first year.
16:04:45 5 Q. And what will happen at the end of the third
16:04:49 6 year of the study?
16:04:51 7 A. We hope renewal of our funding.
16:04:57 8 Q. What is the plan for doing that study? When
16:05:01 9 will the study be completed?
16:05:03 10 A. In September of the year 2001.
16:05:06 11 Q. And what do you hope to show by that study?
16:05:09 12 A. That the types of changes that we have
16:05:14 13 measured and confirmed in the lungs of rats are also
16:05:21 14 evident in the lungs of Rhesus monkeys.
16:05:25 15 Q. Does that mean then at the end of 2001 if you
16:05:29 16 continue with the experiments that you'll have to kill
16:05:31 17 the monkeys?
16:05:33 18 A. Yes.
16:05:33 19 Q. And then you'll take their lungs and analyze
16:05:36 20 the tissues?
16:05:36 21 A. That is correct.
16:05:39 22 Q. Will you also do the methacholine analysis?
16:05:41 23 A. No.
16:05:42 24 Q. What analyses will you do?
16:05:45 25 A. Pulmonary function testing, as we would do in
16:05:51 26 a human child.
16:05:54 27 Q. What else will you do?
16:05:56 28 A. We will also have been monitoring the



16:06:03 1 maturation of the fetus during the gestational period,
16:06:10 2 using approaches that allow us to do that in a
16:06:15 3 noninvasive manner. We have been monitoring the
16:06:22 4 nicotine, cotinine levels within the mother and in the
16:06:29 5 postnatal infant. We will also be doing studies to look
16:06:34 6 at the metabolic function of these lungs. We'll be
16:06:41 7 looking at the anatomy of the lungs from the trachea
16:06:45 8 down to the air sacs where gas exchange is taking place.
16:06:51 9 So these will involve anatomical studies,
16:06:56 10 biochemical studies, physiological studies and
16:07:02 11 microscopic studies.
16:07:06 12 Q. Okay. How will you do the pulmonary function
16:07:10 13 tests after you have killed the animals?
16:07:13 14 A. The animals will be alive. So this is a
16:07:18 15 study -- The pulmonary function testing will be done
16:07:20 16 seven to ten days before necropsy.
16:07:24 17 Q. And how do you do those studies?
16:07:26 18 A. As you would do with a small child, these
16:07:30 19 will be done in a -- using pulmonary function testing
16:07:35 20 that's designed for children so that it -- but this will
16:07:39 21 be done under anesthetic. The animals will be
16:07:44 22 anesthetized.
16:07:45 23 Q. Okay. Can monkeys get asthma?
16:07:52 24 A. Yes.
16:07:56 25 Q. How old are the oldest of the infants in the
16:08:02 26 studies that you have ongoing?
16:08:03 27 A. They all fall in a range of 70 to 80 days of

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16:08:10 28 age.

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16:08:10 1 Q. What is that equivalent to in terms of a
16:08:13 2 human age?
16:08:22 3 A. Probably one to two years of age.
16:08:31 4 Q. I assume that like with the rats, you have
16:08:34 5 someone who is observing the physical condition of the
16:08:37 6 monkeys during the course of these experiments; is that
16:08:40 7 correct?
16:08:40 8 A. Very extensive monitoring.
16:08:42 9 Q. Have you observed any differences in the
16:08:45 10 physical condition between the monkeys who are exposed
16:08:49 11 to the ADSS and the monkeys who are not exposed to the
16:08:55 12 ADSS?
16:08:56 13 A. None have been reported.
16:08:57 14 Q. Do any of the monkeys that have been exposed
16:09:01 15 to the ADSS have asthma?
16:09:08 16 A. That is really too early to say. But if you
16:09:12 17 want to know an n of one, I can tell you that --
18 (Reporter interrupted)
19 THE WITNESS: A sample size of one.
16:09:22 20 -- because we've only performed the pulmonary
16:09:23 21 function tests on one control and one treated animal so
16:09:27 22 far.
16:09:28 23 MR. CAFFERTY: Q. What did that show?
16:09:29 24 A. That the infant that had been exposed
16:09:33 25 perinatally to aged and diluted sidestream smoke has
16:09:37 26 about a threefold greater airway resistance than the
16:09:41 27 control animal does.
16:09:42 28 Q. Okay.

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16:09:44 1 A. But that is an n of one.
16:09:47 2 Q. And how did you perform that test?
16:09:50 3 A. Through using pulmonary function testing.
16:09:54 4 As I described, this would be with the infant
16:09:58 5 anesthetized and the -- with the trachea -- basically a
16:10:08 6 catheter placed down into the trachea so pulmonary
16:10:11 7 function tests and pulmonary function maneuvers could be
16:10:15 8 performed on the animal.
16:10:17 9 Q. What does that involve? Does that involve
16:10:21 10 blowing air into the lungs of the animal?
16:10:27 11 A. Well, it's -- in part that is it. But it's
16:10:30 12 actually measurements that allow us to look at --
16:10:33 13 measure airway resistance. I think we're measuring the
16:10:38 14 title volume or just the normal breathing volume of the
16:10:42 15 infant in anesthetized state.
16:10:50 16 Q. All right. Now, earlier today you used a
16:10:54 17 term -- and I think you also used it in your
16:11:02 18 declaration. It's called environmentally relevant
16:11:04 19 concentrations.
16:11:04 20 A. Yes.
16:11:05 21 Q. What is an environmentally relevant
16:11:09 22 concentration?
16:11:10 23 A. I mean by that that it would be a
16:11:12 24 concentration of particulate matter that would -- that
16:11:15 25 could occur in the environment in a room or any location
16:11:19 26 where an individual is smoking and would be measured in
16:11:26 27 the vicinity of that individual.
16:11:28 28 Q. How do you determine whether a concentration

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16:11:32 1 of particulate is an environmentally relevant
16:11:36 2 concentration?
16:11:36 3 A. I would base that on what type of

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16:11:42 4 concentration of smoke is generated around -- or a cloud
16:11:47 5 of smoke that is generated around a person who is
16:11:53 6 smoking, would be what I'd base as environmentally
16:11:58 7 relevant.
16:11:59 8 Q. Is there some ratio between the actual
16:12:01 9 exposures in the real world and the exposures in the
16:12:06 10 laboratory that determines whether or not something is
16:12:08 11 environmentally relevant?
16:12:10 12 A. I'm not sure I understand your question.
16:12:14 13 Q. Okay. Your environmentally relevant
16:12:16 14 determination involves a comparison of the concentration
16:12:20 15 that you are using in the laboratory to some other
16:12:24 16 concentration; correct?
16:12:25 17 A. Yes.
16:12:25 18 Q. And how would you define that other
16:12:28 19 concentration?
16:12:28 20 A. We know that in the laboratory we're going
16:12:32 21 to -- we are generating a concentration of TSP of
16:12:37 22 1 milligram per cubic meter. Our definition of that
16:12:43 23 being environmentally relevant is based on the fact that
16:12:49 24 can 1 milligram per cubic meter concentration of TSP be
16:12:54 25 found in an environment where people are smoking.
16:12:59 26 And so that's based on the proximity to the
16:13:05 27 cigarette or to the individual who is smoking.
16:13:09 28 Typically, we have considered that someone who is



16:13:14 1 smoking if they're providing care for an infant, that
16:13:19 2 the concentration of particulate matter that surrounds
16:13:25 3 that person and close to the vicinity of that person,
16:13:30 4 especially if they're caring for a child, is going to be
16:13:33 5 much higher than from a distance from that individual
16:13:36 6 who is smoking.
16:13:40 7 In other words, what we would assume is that
16:13:43 8 although 1 milligram per cubic meter, we admit, is a
16:13:48 9 high concentration of particulate matter to be measuring
16:13:54 10 in field studies, that the actual concentration of
16:13:59 11 particulate matter next to a person who is smoking could
16:14:05 12 reach and exceed easily 1 milligram per cubic meter of
16:14:09 13 particulate concentration.
16:14:10 14 Q. Over what period of time might that level be
16:14:15 15 exceeded?
16:14:16 16 A. And I don't have an answer for that.
16:14:18 17 Q. And over what period of time do you expose
16:14:22 18 the animals to 1 milligram per liter?
16:14:24 19 A. Six hours per day.
16:14:26 20 Q. Would a child be exposed to an average of 1
16:14:31 21 milligram per liter over six hours being around a
16:14:36 22 caregiver?
16:14:37 23 MR. BROOKEY: Object. That's an incomplete
16:14:39 24 hypothetical, lacks foundation. He can answer if he
16:14:42 25 knows.
16:14:43 26 THE WITNESS: And I just need to make a
16:14:45 27 correction. It would be 1 milligram per cubic meter.
16:14:48 28 MR. CAFFERTY: Q. I'm sorry. I meant to say



16:14:50 1 that. Thank you.
16:14:52 2 A. And I really don't know. If someone were a
16:14:58 3 chain smoker and providing for the care of an infant,
16:15:06 4 there could be a significant amount of time that
16:15:09 5 concentrations could be within that range. I think it
16:15:15 6 would be inappropriate for us to assume that in our
16:15:20 7 experimental studies that we're trying to exactly
16:15:23 8 reproduce what we think would be even, you know, the

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16:15:28 9 worst case scenario. I mean, there is the possibility
16:15:32 10 that someone could actually be exposed for hours on end
16:15:36 11 to extremely high levels of environmental tobacco smoke,
16:15:42 12 but the likelihood of that occurring under the
16:15:46 13 conditions that we use for our animal studies is not
16:15:49 14 very likely.
16:15:51 15 I think the important point that we're trying
16:15:54 16 to make is that we're using a concentration of cigarette
16:15:59 17 smoke that is possible for people to encounter in the
16:16:10 18 environment.
16:16:10 19 Q. Okay. If the actual average concentration to
16:16:14 20 which someone were exposed was ten times less than your
16:16:19 21 1 milligram per meter, would your 1 milligram per meter
16:16:24 22 still be environmentally relevant?
16:16:26 23 MR. BROOKEY: Objection. Incomplete
16:16:28 24 hypothetical, lack of foundation. He can answer.
16:16:32 25 THE WITNESS: Again, I think that depending
16:16:35 26 upon the conditions where smoking is occurring, you'll
16:16:40 27 have very different concentrations of TSP. And so I
16:16:47 28 think that a concentration that is ten times lower than



16:16:51 1 what we're using can be environmentally relevant. But
16:16:57 2 that doesn't necessarily mean that the 1 milligram per
16:17:02 3 cubic meter concentration of TSP becomes irrelevant.
16:17:10 4 MR. CAFFERTY: Q. Correct me if I'm wrong.
16:17:12 5 I believe you testified earlier today that 30 milligrams
16:17:16 6 per cubic meter is not environmentally relevant with
16:17:18 7 respect to ETS; is that correct?
16:17:21 8 A. That is correct.
16:17:22 9 Q. Where between 1 milligram per cubic meter and
16:17:25 10 30 milligrams per cubic meter do you draw the line at
16:17:29 11 what is environmentally relevant and what's not?
16:17:32 12 MR. BROOKEY: Same objections.
16:17:36 13 THE WITNESS: My impression is that if you go
16:17:42 14 above 4 milligrams per cubic meter of particulate
16:17:47 15 matter, that that would be rather rare to encounter
16:17:54 16 conditions that would be above that. So I think that
16:18:01 17 those conditions could go up to 4 milligrams.
16:18:05 18 I mean, I guess there's always the
16:18:08 19 possibility depending -- I'm sure that there are those
16:18:13 20 conditions where if a person wanted to, to
16:18:18 21 experimentally try to do it, that they might be able to
16:18:23 22 generate smoke in a room or in some sort of container
16:18:29 23 where they could get above 4 milligrams. But I think it
16:18:33 24 would be -- I would think that even that person would be
16:18:36 25 uncomfortable and would decide, you know, not to do
16:18:41 26 that.
16:18:41 27 I'm not speaking from an authority
16:18:47 28 perspective of knowing some publication on this sort of



16:18:53 1 thing. I'm just speaking from what I would think would
16:18:57 2 be logical and potentially possible to occur.
16:19:05 3 MR. CAFFERTY: Q. What is it about 4
16:19:07 4 milligrams per cubic meter that would make it
16:19:10 5 environmentally irrelevant to ETS?
16:19:15 6 MR. BROOKEY: Objection. Incomplete
16:19:17 7 hypothetical, lack of foundation. It's based on a
16:19:21 8 mischaracterization of prior testimony. But he can
16:19:23 9 answer.
16:19:24 10 THE WITNESS: Well, to answer that question,
16:19:28 11 is that since -- if environmental tobacco smoke is
16:19:34 12 sidestream cigarette smoke, plus exhaled mainstream
16:19:37 13 cigarette smoke, I think if a person could actually

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16:19:42 14 smoke enough or you could get enough people smoking
16:19:45 15 enough in a room to create those conditions, that it is
16:19:53 16 relevant. If it's possible to produce those conditions,
16:19:57 17 then it becomes relevant. But whether that's practical
16:20:02 18 of what really happens to people who choose to smoke is
16:20:07 19 probably unlikely.
16:20:11 20 MR. CAFFERTY: Q. Do you know what the
16:20:14 21 average ETS exposure levels are in milligrams per cubic
16:20:19 22 meter in California today in residences?
16:20:24 23 MR. BROOKEY: Objection. Asked and answered
16:20:26 24 a few times. You can answer again.
16:20:29 25 THE WITNESS: And again, my answer to that is
16:20:33 26 I would think that it would be dependent upon whether --
16:20:36 27 on the behavior of smokers in residences. I would think
16:20:43 28 that those concentrations could be anywhere from very



16:20:47 1 low, if it's a very well-ventilated room with lots of
16:20:54 2 air exchanges occurring, to very high levels if it has
16:20:58 3 very poor ventilation and numerous people smoking in the
16:21:02 4 same room.
16:21:03 5 MR. CAFFERTY: Q. I guess maybe I didn't ask
16:21:06 6 that clearly enough. What I want to know is, do you
16:21:11 7 know what the average concentration of ETS is in
16:21:14 8 California residences today?
16:21:16 9 MR. BROOKEY: Objection. It's been asked and
16:21:17 10 answered enough times to now be argumentative. You can
16:21:21 11 answer the question again.
16:21:22 12 THE WITNESS: And based on some study of
16:21:26 13 field sampling and surveys, I don't know what that
16:21:32 14 concentration is for the State of California. I'm not
16:21:36 15 sure how you define what a residence is. If we take the
16:21:41 16 fact that 78 percent of the people or 82 percent of the
16:22:16 17 people of California don't smoke, and there are many
16:22:18 18 people who would not allow smoking in their homes, then
16:22:21 19 I would say that the particulate levels in milligrams
16:22:24 20 per cubic meter are going to be very low in most
16:22:27 21 residences in the State of California.
16:22:28 22 MR. CAFFERTY: Q. Do you know what the
16:22:29 23 average ETS levels are in a California residence where
16:22:34 24 one or more smokers lives?
16:22:36 25 MR. BROOKEY: Same objections.
16:22:37 26 THE WITNESS: And I don't know a specific
16:22:38 27 concentration.
16:22:39 28 MR. CAFFERTY: Q. Do you know whether 1



16:22:39 1 milligram per liter is an environmentally relevant
16:22:41 2 concentration for average ETS exposures in California
16:22:44 3 residences where one or more smokers lives today?
16:22:47 4 MR. BROOKEY: The same objections.
16:22:49 5 I'd just like to point out that Mr. Cafferty
16:22:51 6 had represented he had approximately an hour's worth of
16:22:54 7 questioning. We're now at almost two and a half and
16:22:56 8 we're into repetitive questions. So he can answer this
16:22:59 9 question again, but I would be hopeful that we start
16:23:02 10 asking and responding to some new questions shortly.
16:23:04 11 THE WITNESS: Your question is, what would be
16:23:06 12 1 milligram, and it should be per cubic meter, not per
16:23:11 13 liter. And the answer that I would give is that 1
16:23:18 14 milligram per cubic meter of particulate matter
16:23:22 15 generated by environmental tobacco smoke is possible to
16:23:28 16 attain in residences where there are people smoking.
16:23:35 17 MR. CAFFERTY: Q. You mentioned yesterday
16:23:37 18 that you were doing some collaborative research, I

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16:23:40 19 believe, with Dr. Slotkin; is that correct?
16:23:42 20 A. Yes.
16:23:42 21 Q. What is that research?
16:23:48 22 A. It is to look at certain enzymes within the
16:23:57 23 lung, the heart, and potentially the brain that are
16:24:01 24 involved in potentially neural control of breathing and
16:24:11 25 ventilatory control.
16:24:13 26 Q. Does that involve exposures to ADSS?
16:24:17 27 A. Yes.
16:24:18 28 Q. And what kind of animal are you using?



16:24:20 1 A. Rats and Rhesus monkeys.
16:24:22 2 Q. And where is that work being performed?
16:24:25 3 A. At the University of California, Davis.
16:24:28 4 Q. What are you trying to establish through that
16:24:31 5 research?
16:24:34 6 A. To determine if there are biological
16:24:44 7 plausibility in an animal model for exposure, perinatal
16:24:51 8 exposure, to ETS leading to sudden infant death
16:24:56 9 syndrome.
16:24:59 10 Q. And what is your experimental design for that
16:25:03 11 study -- or those studies, excuse me.
16:25:06 12 A. At this point they are very preliminary.
16:25:11 13 They are simply using an exposure of 1 milligram per
16:25:16 14 cubic meter of particulate matter from the aged and
16:25:19 15 diluted sidestream smoke and doing exposures in utero
16:25:25 16 and postnatally up to 21 days of age in the rat and up
16:25:35 17 to 70 to 80 days in the Rhesus monkey, postnatal age.
16:25:41 18 Q. How long will it be before you complete that
16:25:45 19 study or those studies?
16:25:49 20 A. The first study, which is actually in
16:25:58 21 preparation for submission to a scientific journal --
16:26:06 22 Q. And when was that study completed?
16:26:12 23 A. The analysis was completed probably one month
16:26:17 24 ago.
16:26:18 25 Q. Was that a rat study or a monkey study?
16:26:21 26 A. Monkey study.
16:26:22 27 Q. And over what period of time did that monkey
16:26:27 28 study occur?



16:26:33 1 A. Are you asking what was the exposure time
16:26:37 2 for --
16:26:37 3 Q. Let me ask it differently. When did you
16:26:41 4 perform the experiments that serve as the basis for that
16:26:45 5 study?
16:26:45 6 A. They were initiated in January of 1999 and
16:26:52 7 were completed, the exposures, by mid June of 1999.
16:26:59 8 Q. And what conclusions did you reach based on
16:27:02 9 those experiments?
16:27:06 10 A. They still are preliminary, but we have found
16:27:12 11 that there is no -- no developmental -- there's no
16:27:22 12 developmental abnormalities during gestation to exposure
16:27:28 13 at these concentrations of ETS; that the animals appear
16:27:33 14 to be normal from the physical perspective with these
16:27:38 15 exposures; that looking at the metabolic profile for the
16:27:47 16 cytochrome P450 system, there is a striking difference
16:27:52 17 between monkeys and rats in these studies; and that the
16:28:06 18 studies that Dr. Slotkin is doing on the enzymes that
16:28:09 19 he's looking at we don't have a correlation in the rat
16:28:11 20 at this moment, although those are ongoing studies, but
16:28:15 21 he has shown that there are striking differences between
16:28:18 22 the controls and those infants that are exposed to aged
16:28:22 23 and diluted sidestream smoke.

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16:28:25 24 And the other observation that we've made so
16:28:30 25 far is that there appears to be significant changes in
16:28:34 26 pulmonary function based on studies that are ongoing at
16:28:39 27 the moment.
16:28:47 28 Q. Is this monkey study one of the monkey



16:28:50 1 studies that we discussed before, or is this a third
16:28:54 2 monkey study?
16:28:54 3 A. No. We've discussed -- we've discussed
16:28:57 4 portions of it before.
16:28:59 5 Q. Okay. And does this monkey study serve as
16:29:03 6 the basis for any of the conclusions that you are --
16:29:06 7 conclusions or opinions that you intend to offer at
16:29:08 8 trial?
16:29:09 9 A. No.
16:29:10 10 Q. I don't have any further questions.
16:29:23 11 MR. KODSI: I don't either.
16:29:26 12 MR. LENDRUM: No questions.
16:29:28 13 MS. BRITTMAN: I have no questions, thank
16:29:30 14 you.
16:29:31 15 MR. BROOKEY: I have just a couple.
16:29:32 16 MR. CAFFERTY: Okay.
16:29:43 17 EXAMINATION BY MR. BROOKEY
16:29:43 18 MR. BROOKEY: Q. Dr. Pinkerton, is it your
16:29:51 19 opinion that exposure to ETS -- that it is more likely
16:29:56 20 than not that exposure to ETS is a substantial factor in
16:30:00 21 causing acute lower respiratory tract infections in
16:30:03 22 children?
16:30:04 23 A. Yes.
16:30:13 24 MR. KODSI: Objection, leading.
16:30:16 25 MR. LENDRUM: Calls for a legal opinion.
16:30:20 26 THE WITNESS: Yes.
16:30:22 27 MR. BROOKEY: Q. What is the basis for your
16:30:24 28 opinion?



16:30:26 1 A. This is primarily based on a number of
16:30:30 2 epidemiological studies which have shown that children
16:30:35 3 who are exposed to environmental tobacco smoke have a
16:30:40 4 persistence of infections. They have a very early onset
16:30:46 5 of infections that may require admission to the hospital
16:30:51 6 and that they have a proclivity of having respiratory
16:30:59 7 infections at a greater rate than children who grow up
16:31:03 8 in homes where smoking does not occur.
16:31:11 9 Q. And is this opinion something you will be
16:31:14 10 prepared to testify as to at trial?
16:31:19 11 A. Yes.
16:31:20 12 Q. Is it your opinion that it is more likely
16:31:23 13 than not that ETS exposure is a substantial factor in
16:31:30 14 causing asthma induction and exacerbation in children?
16:31:34 15 MR. KODSI: Objection, leading.
16:31:35 16 MR. LENDRUM: Objection. Calls for a legal
16:31:37 17 conclusion.
16:31:38 18 THE WITNESS: Yes.
16:31:40 19 MR. BROOKEY: Q. What is the basis for your
16:31:44 20 opinion?
16:31:44 21 A. This is based on epidemiological studies
16:31:47 22 which show a relationship between environmental tobacco
16:31:53 23 smoke exposures during early childhood and the increased
16:32:02 24 incidence of asthma and increased severity of asthma.
16:32:06 25 Q. And will you be prepared to offer this
16:32:09 26 opinion at trial?
16:32:10 27 A. Yes.
16:32:12 28 Q. Is it your opinion that it is more likely

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16:32:15 1 than not that ETS exposure is a substantial factor in
16:32:20 2 causing chronic respiratory symptoms in children?
16:32:22 3 MR. KODSI: Objection. Leading, calls for a
16:32:27 4 legal conclusion.
16:32:27 5 THE WITNESS: Yes.
16:32:29 6 MR. BROOKEY: Q. And what is the basis for
16:32:31 7 that opinion?
16:32:32 8 A. Again, it's based on epidemiological studies
16:32:36 9 which have demonstrated decrements in pulmonary function
16:32:40 10 that are consistent with exposures of children to
16:32:44 11 environmental tobacco smoke, typically in the home, and
16:32:49 12 that there are a number of studies that suggest that
16:32:53 13 these decrements in pulmonary function persist into the
16:32:59 14 teenage years.
16:33:00 15 Q. And would you be prepared to testify as to
16:33:05 16 this opinion at trial?
16:33:06 17 A. Yes.
16:33:07 18 Q. Is it your opinion that it is more likely
16:33:10 19 than not that ETS exposure is a substantial factor in
16:33:15 20 causing decreased pulmonary function?
16:33:17 21 MR. KODSI: Objection. Leading, calls for a
16:33:21 22 legal conclusion.
16:33:21 23 THE WITNESS: Yes.
16:33:23 24 MR. BROOKEY: Q. What is the basis for that
16:33:24 25 opinion?
16:33:25 26 A. Epidemiological studies which show that there
16:33:28 27 are decrements in lung function in children who are
16:33:32 28 living in homes where a smoker resides.



16:33:36 1 Q. And you'll be prepared to testify at trial as
16:33:40 2 to this opinion?
16:33:41 3 A. Yes.
16:33:42 4 Q. I have no further questions.
16:33:44 5 MR. KODSI: I just have a few.
6 FURTHER EXAMINATION BY MR. KODSI
16:33:47 7 MR. KODSI: Q. On the four points that
16:33:51 8 Mr. Brookey just asked you where you cited that you will
16:33:55 9 be -- the basis for your opinion are epidemiologic
16:33:59 10 studies, you would agree that none of those
16:34:02 11 epidemiologic studies were provided to us in response to
16:34:05 12 that deposition notice; correct?
16:34:08 13 MR. BROOKEY: Objection. Asked and answered.
16:34:11 14 THE WITNESS: It is my understanding that you
16:34:15 15 have a copy of the Cal E.P.A. document.
16:34:19 16 MR. KODSI: Q. Would all the -- Is your
16:34:22 17 answer then that all of the epidemiologic studies you
16:34:26 18 relied upon for your opinions in this case are cited in
16:34:29 19 the Cal E.P.A. document?
16:34:31 20 A. There are a good number of papers that are
16:34:34 21 found in there.
16:34:35 22 Q. And you would agree that for each of the
16:34:39 23 health endpoints you just discussed with Mr. Brookey,
16:34:42 24 there are epidemiology studies which also conclude that
16:34:45 25 they could not find a statistically significant increase
16:34:50 26 in those health effects?
16:34:53 27 MR. BROOKEY: Objection. Lack of foundation,
16:34:55 28 asked and answered and compound. You can answer.



16:34:58 1 THE WITNESS: I think that there are a few
16:35:02 2 studies that would show no effects. Based on the number
16:35:11 3 of studies that have been performed, I think they are in
16:35:17 4 the minority of studies that would show no effects.

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16:35:23 5 MR. KODSI: I have nothing further.
16:35:24 6 Pat?
16:35:25 7 FURTHER EXAMINATION BY MR. CAFFERTY
16:35:25 8 MR. CAFFERTY: Q. In formulating these
16:35:26 9 opinions that you just gave about these four disease
16:35:31 10 endpoints, is that a proper term, "disease endpoints"?
16:35:35 11 A. Yes.
16:35:36 12 Q. Okay. So using that is okay by you?
16:35:41 13 A. Yes.
16:35:41 14 Q. And in formulating your opinion that these
16:35:45 15 four disease endpoints are caused by exposure to ETS,
16:35:50 16 have you reviewed the entire body of epidemiology
16:35:52 17 literature for each of those endpoints?
16:35:55 18 MR. BROOKEY: Objection. Asked and answered
16:35:57 19 a few times, compound. He can answer again.
16:36:00 20 THE WITNESS: I don't think I would be able
16:36:03 21 to say that I have read the entire body of literature,
16:36:07 22 that there are probably a number of studies that either
16:36:11 23 I have missed or have not read.
16:36:13 24 MR. CAFFERTY: Q. Approximately how many
16:36:15 25 studies did you review regarding acute lower respiratory
16:36:18 26 infections in children?
16:36:25 27 A. Those probably number -- and there's a
16:36:29 28 combination of different things that are looked at, not



16:36:32 1 only respiratory infections but also just respiratory
16:36:36 2 symptoms such as cough and wheezing. I would say that
16:36:41 3 the number of studies are five to ten.
16:36:46 4 Q. Okay. Approximately how many studies did you
16:36:50 5 review regarding asthma induction and exacerbation?
16:36:55 6 A. The number of studies there are probably on
16:36:59 7 the order of three to six.
16:37:02 8 Q. Approximately how many studies did you review
16:37:04 9 regarding chronic respiratory symptoms?
16:37:12 10 A. Probably on the order of eight to ten.
16:37:19 11 Q. Approximately how many studies did you review
16:37:22 12 regarding decreased pulmonary function?
16:37:29 13 A. Approximately five to ten.
16:37:32 14 Q. When did you review the studies regarding
16:37:36 15 acute lower respiratory infections?
16:37:39 16 A. Acute respiratory -- lower respiratory
16:37:44 17 infections?
16:37:44 18 Q. Yes.
16:37:45 19 A. During the work that we have done over the
16:37:51 20 last several years to put together our papers on
16:37:55 21 animal -- on our animal studies, we have often related
16:38:01 22 those studies to epidemiological studies that have been
16:38:06 23 done. So I would say that those studies have been
16:38:10 24 reviewed as far back as five to six years ago up
16:38:16 25 until up to and including the last couple of days, also.
16:38:20 26 Q. When did you review the studies regarding
16:38:23 27 asthma induction and exacerbation?
16:38:25 28 A. From basically 1995 to date.



16:38:30 1 Q. When did you review the studies regarding
16:38:33 2 chronic respiratory symptoms?
16:38:39 3 A. Those would probably have been started in
16:38:42 4 1994, some of the first initial studies that we were
16:38:47 5 looking at from an epidemiological perspective as we
16:38:51 6 were preparing our papers for the animal studies that we
16:38:54 7 were doing.
16:38:58 8 Q. When did you review the studies regarding
16:39:01 9 decreased pulmonary function?

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16:39:09 10 A. From probably 1995 to 1996 to the present
16:39:14 11 date.
16:39:24 12 Q. Are the epidemiology studies that you
16:39:28 13 reviewed regarding acute lower respiratory infections
16:39:32 14 the only basis for your opinion that acute lower
16:39:36 15 respiratory infections in children are caused by ETS
16:39:40 16 exposure?
16:39:40 17 MR. BROOKEY: Objection, asked and answered.
16:39:42 18 THE WITNESS: And I would answer no to that
16:39:45 19 based on the studies that we have done on the guinea
16:39:49 20 pigs, although I would qualify that we did not attempt
16:39:53 21 to infect any guinea pigs with a bacterial or viral
16:39:58 22 infection. But we certainly found that there was
16:40:01 23 biological plausibility of how increased acute -- well,
16:40:09 24 increased lower respiratory tract infection could occur
16:40:13 25 based on our animal studies. But the primary data comes
16:40:17 26 from epidemiology.
16:40:18 27 MR. CAFFERTY: Q. Is there any other basis
16:40:20 28 for that opinion?



16:40:21 1 A. Other than epidemiology and animal studies?
16:40:25 2 Q. Yes. And the guinea pig studies that you
16:40:27 3 mentioned.
16:40:27 4 A. Those would cover the major references that
16:40:35 5 we would use to -- that I would use to establish the
16:40:41 6 association of increased respiratory tract infection and
16:40:45 7 ETS exposure.
16:40:47 8 Q. It's important for us to understand the
16:40:50 9 entire basis for your opinion. When Mr. Brookey asked
16:40:53 10 you, you only mentioned epidemiology studies. Now
16:40:56 11 you've indicated guinea pig studies. Is there anything
16:40:58 12 else, major, minor or otherwise, that serves as the
16:41:01 13 basis for your opinion that acute lower respiratory
16:41:04 14 infections in children are caused by ETS exposure?
16:41:07 15 MR. BROOKEY: I'll object. That was
16:41:08 16 inappropriately argumentative in tone and content. But
16:41:12 17 he can answer.
16:41:13 18 THE WITNESS: And I would think that the
16:41:15 19 epidemiological studies and the animal studies should be
16:41:18 20 sufficient to base my opinion and testimony on lower
16:41:23 21 respiratory tract infections in children and increased
16:41:28 22 susceptibility due to EST exposure.
16:41:35 23 MR. CAFFERTY: Q. So would it be fair to
16:41:37 24 state then that the epidemiology studies and the guinea
16:41:38 25 pig studies are the only basis for your opinion that
16:41:41 26 acute lower respiratory infections in children are
16:41:43 27 caused by ETS exposures?
16:41:45 28 MR. BROOKEY: Objection. Asked and answered,



16:41:46 1 harassing, argumentative. He can answer it one last
16:41:50 2 time.
16:41:50 3 THE WITNESS: And I think the only thing that
16:41:53 4 I would qualify is I wouldn't limit it to just our one
16:41:57 5 guinea pig study, because again, that guinea pig study
16:42:01 6 did not involve the introduction of an infectious agent.
16:42:05 7 So there is the -- so I think it would be appropriate to
16:42:10 8 say that there may be other animal studies that could be
16:42:45 9 included as a basis for making that kind of judgment
16:42:47 10 about lower respiratory tract infections in children and
16:42:49 11 ETS exposures.
16:42:50 12 MR. CAFFERTY: Q. What other animal studies
16:42:51 13 could be included?
16:42:52 14 A. And at this -- I do not know at this time.

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16:42:53 15 Q. Is there any other basis other than the
16:42:56 16 epidemiology studies for your opinion that asthma
16:42:57 17 induction and exacerbation are caused by ETS exposure?
16:42:59 18 A. Again, I would say that because of the fact
16:43:01 19 that we've done animal studies that show that there are
16:43:04 20 increased airway hyperreactivity that is one of the
16:43:07 21 hallmarks for asthma, that I would include that as part
16:43:08 22 of my basis for making that kind of judgment about ETS
16:43:12 23 exposures and asthma.
16:43:13 24 Q. Is there anything else that serves as the
16:43:15 25 basis for your opinion?
16:43:16 26 A. At the present time, no.
16:43:25 27 Q. Is there any basis other than epidemiology
16:43:28 28 studies for your opinion that chronic respiratory



16:43:32 1 symptoms are caused by ETS exposure?
16:43:37 2 A. Again, I would preface that by saying that I
16:43:42 3 think that the animal studies that we have conducted in
16:43:45 4 my laboratory further serve to show that there is a
16:43:51 5 basis for persistent respiratory changes or symptoms as
16:44:01 6 we've measured using airway reactivity for the basis of
16:44:08 7 that judgment.
16:44:12 8 Q. Is there anything else that serves as the
16:44:16 9 basis for that opinion?
16:44:17 10 A. Not at this time.
16:44:19 11 Q. Is there anything other than epidemiology
16:44:21 12 studies that serves as the basis for your opinion that
16:44:25 13 decreased pulmonary function is caused by exposure to
16:44:28 14 ETS?
16:44:33 15 A. No, that I think that the epidemiological
16:44:38 16 studies are the major basis for my judgment on that.
16:44:46 17 Q. You used a term -- or Mr. Brookey used a term
16:44:49 18 in his question, "substantial factor." What do you
16:44:53 19 understand that term to mean?
16:44:57 20 MR. BROOKEY: Objection to the extent it
16:44:59 21 calls for a legal conclusion. He can answer it.
16:45:01 22 MR. CAFFERTY: That was kind of our objection
16:45:03 23 before.
16:45:04 24 Q. But I just want to get your understanding as
16:45:06 25 to what "substantial factor" means.
16:45:08 26 A. That there is a causality associated with
16:45:15 27 that factor.
16:45:18 28 Q. What do you mean by causality?



16:45:20 1 A. That basically that there is a clear
16:45:29 2 biological basis for that being true.
16:45:36 3 Q. I don't have any other questions.
16:45:38 4 Does anybody else?
16:45:39 5 MR. LENDRUM: Yes, I do. I don't know. Will
16:45:42 6 the mike pick up from here?
16:45:44 7 VIDEO OPERATOR: I can get you on the table
16:45:47 8 mike. I think you're all right.
9 EXAMINATION BY MR. LENDRUM
16:45:53 10 MR. LENDRUM: Q. Dr. Pinkerton, I just have
16:45:54 11 a few questions in response to your counsel's
16:45:57 12 examination.
16:45:58 13 I think you earlier agreed that the items
16:46:00 14 that you were asked to -- asked about by Mr. Brookey,
16:46:04 15 you identified those as disease endpoints?
16:46:06 16 A. Yes.
16:46:07 17 Q. Are there any other disease endpoints that
16:46:09 18 you will be testifying to at trial in this matter?
16:46:13 19 MR. BROOKEY: Objection. Asked and answered.

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16:46:15 20 It was gone over at length yesterday. He can answer
16:46:18 21 again briefly.
16:46:20 22 THE WITNESS: Not at this time.
16:46:22 23 MR. LENDRUM: Q. I didn't know if
16:46:25 24 Mr. Brookey had just chosen a subset of the disease
16:46:29 25 endpoints.
16:46:30 26 Mr. Brookey used the term "more likely than
16:46:34 27 not" in his series of questions about the disease
16:46:38 28 endpoints. Do you recall that?



16:46:40 1 A. Yes.
16:46:41 2 Q. What do you understand that phrase to mean,
16:46:44 3 "more likely than not"?
16:46:48 4 A. My understanding is that the relationship
16:46:55 5 between that disease endpoint and its association with
16:47:02 6 ETS is a causal factor rather than -- that it's more
16:47:13 7 likely than not that that's a potential cause for those
16:47:18 8 disease endpoints to be found in children.
16:47:21 9 Q. I think earlier you indicated that when you
16:47:23 10 met with Mr. McGuire last week you talked about this
16:47:27 11 concept of causality, I think is what you described it
16:47:31 12 as.
16:47:31 13 A. Yes.
16:47:31 14 Q. And I believe you said greater than 51
16:47:34 15 percent certainty?
16:47:35 16 A. Yes.
16:47:36 17 Q. Do you recall telling us that?
16:47:37 18 A. Yes.
16:47:38 19 Q. Is that what you mean by more likely than
16:47:40 20 not, that in your opinion each of these disease
16:47:42 21 endpoints has greater than 51 percent chance of causing
16:47:47 22 the disease endpoint?
16:47:52 23 A. From -- yes.
16:47:53 24 Q. Can you state with any greater degree of
16:47:57 25 certainty whether each of these disease endpoints are
16:48:01 26 caused by ETS?
16:48:04 27 MR. BROOKEY: Object. It's been asked and
16:48:06 28 answered over the last two days. It's compound. He can



16:48:09 1 answer it again.
16:48:11 2 THE WITNESS: And my answer would be that I
16:48:13 3 think through many of the epidemiological studies and
16:48:17 4 through some of the animal studies, that we can discuss
16:48:23 5 those -- that cause and effect relationship with a much
16:48:28 6 greater degree of certainty than 51 percent.
16:48:30 7 MR. LENDRUM: Q. Do you have a percentage in
16:48:32 8 mind for each of the disease endpoints?
16:48:34 9 A. No.
16:48:36 10 Q. So you don't know if it would be a 75 percent
16:48:39 11 degree of certainty?
16:48:40 12 MR. BROOKEY: Objection. Asked and answered.
16:48:42 13 MR. LENDRUM: Q. Correct?
16:48:42 14 A. That's correct.
16:48:44 15 Q. And as you sit here today, the only degree of
16:48:48 16 certainty that you're prepared to testify to is at least
16:48:52 17 51 percent degree of certainty; correct?
16:48:55 18 MR. BROOKEY: Objection. Asked and answered.
16:48:57 19 Misstates the prior testimony. He can answer.
16:49:00 20 THE WITNESS: Yes.
16:49:02 21 MR. LENDRUM: Q. Did Mr. Brookey go over the
16:49:07 22 questions that he asked you a few minutes ago with you
16:49:11 23 in advance of asking you those questions?
16:49:13 24 MR. BROOKEY: Objection. Vague and

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16:49:14 25 ambiguous.
16:49:15 26 MR. LENDRUM: Q. Did he review his questions
16:49:17 27 of you in advance of asking them to you?
16:49:20 28 MR. BROOKEY: Objection. Vague and



16:49:21 1 ambiguous.
16:49:21 2 THE WITNESS: Yes.
16:49:22 3 MR. LENDRUM: Q. Did you review your answers
16:49:25 4 with him before you came in here and testified in
16:49:30 5 response to Mr. Brookey's questions?
16:49:31 6 MR. BROOKEY: Objection. Vague and
16:49:33 7 ambiguous.
16:49:34 8 THE WITNESS: I gave him answers.
16:49:36 9 MR. LENDRUM: Q. Did Mr. Brookey tell you
16:49:39 10 what he meant by the phrase "more likely than not"?
16:49:42 11 A. No.
16:49:43 12 Q. And so this understanding of more likely than
16:49:47 13 not came from your discussions with Mr. McGuire?
16:49:52 14 A. We didn't discuss that term, "more likely
16:49:56 15 than not."
16:49:57 16 Q. How about the term "substantial factor"? Did
16:50:00 17 Mr. Brookey tell you what he meant by "substantial
16:50:02 18 factor"?
16:50:03 19 A. No, he did not.
16:50:07 20 Q. Mr. Brookey, with respect to each of these
16:50:11 21 four disease endpoints, asked you if you will be
16:50:15 22 prepared to testify as to your opinions at trial. Do
16:50:19 23 you recall him asking you that?
16:50:21 24 A. At this deposition?
16:50:23 25 Q. Yes.
16:50:23 26 A. Yes.
16:50:25 27 Q. Is there anything else you intend to do to
16:50:27 28 prepare yourself to testify as to those opinions in



16:50:30 1 advance of trial?
16:50:32 2 MR. BROOKEY: Objection. That's been asked
16:50:33 3 and answered repeatedly. You can answer again if
16:50:35 4 there's anything else.
16:50:36 5 THE WITNESS: And I would just simply say no.
16:50:41 6 I'll just be prepared to testify.
16:50:45 7 MR. LENDRUM: No further questions.
16:50:47 8 MR. CAFFERTY: Let me ask one other one.
9 FURTHER EXAMINATION BY MR. CAFFERTY
16:50:50 10 MR. CAFFERTY: Q. Dr. Pinkerton, when did
16:50:51 11 you review with Mr. Brookey the questions that he just
16:50:55 12 asked you and the answers that you gave to those
16:50:58 13 questions?
16:50:59 14 MR. BROOKEY: Objection. Vague and
16:50:59 15 ambiguous, compound.
16:51:01 16 THE WITNESS: Today.
16:51:02 17 MR. CAFFERTY: Q. At what time?
16:51:04 18 MR. BROOKEY: Objection. Vague and
16:51:05 19 ambiguous, compound, irrelevant.
16:51:08 20 THE WITNESS: At lunch.
16:51:10 21 MR. CAFFERTY: Thank you.
16:51:15 22 VIDEO OPERATOR: Is that it?
16:51:16 23 MR. KODSI: Yeah.
16:51:17 24 MR. BROOKEY: That's it.
16:51:18 25 MR. CAFFERTY: That's it.
16:51:21 26 VIDEO OPERATOR: Here marks the end of tape
16:51:26 27 No. 7 in the deposition of Kent Pinkerton. The original
16:51:29 28 videotapes will be retained by Vail, Christians at 550 C



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16:51:32 Street, San Diego, California.
16:51:33 Going off the record, the time is 4:51.
(Whereupon, the deposition was
adjourned at 4:51 p.m.)
--oOo--

I declare under penalty of perjury that the foregoing is true and correct. Subscribed at _____, California, this____ day of_____, 2000.

_____
KENT E. PINKERTON



CERTIFICATE OF REPORTER

I, CLARE MACY, a Certified Shorthand Reporter, hereby certify that the witness in the foregoing deposition was by me duly sworn to tell the truth, the whole truth and nothing but the truth in the within-entitled cause;

That said deposition was taken down in shorthand by me, a disinterested person, at the time and place therein stated, and that the testimony of the said witness was thereafter reduced to typewriting, by computer, under my direction and supervision;

I further certify that I am not of counsel or attorney for either or any of the parties to the said deposition, nor in any way interested in the event of this cause, and that I am not related to any of the parties thereto.

DATED: _____, 2000.

_____
CLARE MACY, CSR 5256



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